

HELMINTHOLOGICAL ABSTRACTS

incorporating

BIBLIOGRAPHY OF HELMINTHOLOGY

COMPILED FROM WORLD LITERATURE OF 1957



Prepared by the

COMMONWEALTH BUREAU OF HELMINTHOLOGY

THE WHITE HOUSE, 103 ST. PETER'S STREET, ST. ALBANS, HERTS

Published by the

COMMONWEALTH AGRICULTURAL BUREAUX, FARNHAM ROYAL, BUCKS, ENGLAND

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HELMINTHOLOGICAL ABSTRACTS

INCORPORATING BIBLIOGRAPHY OF HELMINTHOLOGY

FOR THE YEAR 1957

Vol. 26, Part 3

162—Acta Científica Potosina. Mexico.

- a. CABALLERO Y C., E., HIDALGO E., E. & GROCOTT, R. G., 1957.—“Helminths of the República de Panamá. XX. Algunos tremátodos de crocodilianos. Segunda parte.” 1 (1), 99–116. [English summary pp. 115–116.]

(162a) Caballero *et al.* redescribe and figure from the reptile *Caiman fuscus*, in Panama, the strigeids *Proterodiplostomum medusae* (Dubois) n.comb., *P. tumidulum*, *Herpetodiplostomum caimancola* and *Prolecithodiplostomum constrictum*.
M.MCK.

163—Acta Dermato-Venereologica.

- a. PIRILÄ, V. & WIKGREN, B. J., 1957.—“Cases of swimmer's itch in Finland.” 37 (2), 140–148. [French, German & Spanish summaries pp. 147–148.]

(163a) Swimmer's itch, in the cases now reported for the first time from Scandinavia, was acquired in the lakes Tuusulanjärvi and Vesvuo in southern Finland. The causative agents were identified as *Cercaria ocellata* (?) from *Limnaea stagnalis* and *Bilharziella polonica* from *Planorbis corneus*. Lay reports suggest that swimmer's itch is fairly common and may also be present in northern Finland.
R.T.L.

164—Acta Paediatrica.

- a. PLATOU, R. V. & BEAVER, P. C., 1957.—“Visceral larva migrans.” 46 (1), 64–73. [French, German & Spanish summaries pp. 71–72.]

(164a) Platou & Beaver summarize recent clinical observations and experimental work on visceral larva migrans due to *Toxocara canis* and briefly discuss the problem of differential diagnosis.
R.T.L.

165—Acta Physiologica Sinica.

- a. CHU, C. C., TSEN, Y. L., LIANG, Y. & TING, K. S., 1957.—[Studies on antibilharzial drugs. IV. Experimental therapy of 12 new compounds given intraperitoneally in mice.] 21 (1), 12–18. [In Chinese: English summary p. 18.]
b. LIANG, Y., TSEN, Y. L., CHU, C. C. & TING, K. S., 1957.—[Studies on antibilharzial drugs. V. Combined therapy with procaine and tartar emetic.] 21 (1), 19–23. [In Chinese: English summary p. 23.]
c. LIANG, Y., CHU, C. C., TSEN, Y. L. & TING, K. S., 1957.—[Studies on antibilharzial drugs. VI. The antidotal effects of sodium dimercaptosuccinate and BAL-glucoside against tartar emetic.] 21 (1), 24–32. [In Chinese: English summary p. 32.]
d. SHEN, M. L., CHANG, H. M. & TING, K. S., 1957.—[Studies on antibilharzial drugs. VII. Colorimetric microdetermination of antimony.] 21 (2), 127–132. [In Chinese: English summary p. 132.]

(165a) This paper (read before the Shanghai Branch of the Chinese Physiological Society in May, 1956) deals with the therapeutic activities of twelve new compounds against schistosomiasis japonica in white mice. One table gives the formulae of the twelve compounds consisting of six stibonic acids and their related compounds derived from sulpha-drugs,

three dithiastibols, two organic tin compounds and one organic mercury compound. A second table summarizes briefly the results observed, while more details are given under the heading of each drug. The LD₁₀, LD₅₀ or the minimum lethal doses were first found for each drug before treatment. Each mouse was exposed to 40 cercariae and treatment started on the 36th day. Intraperitoneal injections were given once daily for 14 days during which the dosage was gradually increased. The mice were autopsied 14 days after the last day of treatment. The therapeutic effect was judged on the average number of living worms remaining per mouse, disregarding dead or partly destroyed worms. Using tartar emetic as a standard for comparative purposes, Sb-12 was found to be on a par with tartar emetic, while Sb-11 was better, and Sb-5 far better. The formulae of these three compounds are given.

L.S.Y.

(165b) This paper was read before the Shanghai Branch of the Chinese Physiological Society in May, 1956. The experiments are listed under four subheadings. (i) In white mice, intraperitoneal injections with a mixture of procaine (70 mg. per kg. per day) and tartar emetic, given once daily for 14 days reduced the toxicity of tartar emetic and raised the LD₅₀ of the latter from 35 to 45 mg. per kg. per day. (ii) These experiments were extended using procaine and its hydrolytic products, and tartar emetic. It was found that the detoxication effect was primarily due to procaine itself, and not to its hydrolytic products (PABA and DEAE). (iii) Procaine did not lessen the toxicity of tartar emetic to guinea-pigs. (iv) The therapeutic activity of tartar emetic was increased in rabbits infected with *Schistosoma japonicum* by intravenous injections of a mixture of procaine (10 mg. per kg. per day) for 14 days. Injections of procaine alone had no anti-bilharzial effect.

L.S.Y.

(165c) This paper was read before the Shanghai Branch of the Chinese Physiological Society in May, 1956. The experiments, using BAL for comparative purposes, are described under four subheadings. (i) In a single intraperitoneal injection in white mice, the LD₅₀ levels of sodium $\alpha\alpha'$ -dimercaptosuccinate and BAL-glucoside were found to be 2,730 and 5,660 mg. per kg. respectively. Daily injections of the latter will, after a week, give toxic symptoms not unlike those produced by BAL. (ii) Subcutaneous administration of sublethal doses of BAL, BAL-glucoside or sodium $\alpha\alpha'$ -dimercaptosuccinate significantly reduced the toxicity of tartar emetic when given intraperitoneally to mice. The LD₅₀ of tartar emetic was raised from 31 to 52 mg. per kg. by BAL at 40 mg. per kg., from 31 to 85 mg. per kg. by BAL-glucoside at 2,500 mg. per kg., and from 31 to 491 mg. per kg. by sodium $\alpha\alpha'$ -dimercaptosuccinate at 1,500 mg. per kg. (iii) Rabbits were protected against a lethal dose of tartar emetic, or their lives were prolonged, if BAL, BAL-glucoside or sodium $\alpha\alpha'$ -dimercaptosuccinate was administered within eight hours. (iv) All three dimercaptans diminished the therapeutic activity of tartar emetic against schistosomiasis japonica in mice; sodium $\alpha\alpha'$ -dimercaptosuccinate was the most powerful, rendering the tartar emetic totally ineffective, although it is the most powerful antidote hitherto reported.

L.S.Y.

(165d) Details are given of a method for the colorimetric microdetermination of antimony in biological material by the use of rhodamine B and amyl acetate.

R.T.L.

166—Advisory Leaflet. Ministry of Agriculture, Fisheries and Food. London.

- a. ANON., 1957.—“Stem and bulb eelworm on narcissi, hyacinths and related bulbs.” No. 460, 7 pp.
- b. ANON., 1957.—“Stem and bulb eelworm on tulips.” No. 461, 4 pp.
- c. ANON., 1957.—“Pea root eelworm.” No. 462, 4 pp.

167—Agriculture. London.

- a. MICHEL, J. F., 1957.—“Husk in adult cattle.” 64 (5), 224-228.

(167a) Husk in adult cattle may appear suddenly and almost simultaneously in a herd where there has been no clinical husk for several years and deaths may occur within a few

hours. Coughing does not attract attention, larvae may be absent from the faeces and adults from the lungs of those that die. Lungworm-free herds are, however, extremely rare and the outbreaks are not due to the introduction of the infection from outside, but to sudden exposure to a heavy uptake of infection from the pasture which has been contaminated with infected dung by carriers. Michel does not consider that complete eradication of the infection from a herd is feasible. Control must depend more on grazing management than on grassland management.

R.T.L.

168—American Journal of Digestive Diseases.

- a. ROCHE, M., PÉREZ-GIMÉNEZ, M. E., LAYRISSE & PRISCO, E. DI, 1957.—“Gastro-intestinal bleeding in hookworm infection. Studies with radioactive chromium (Cr⁵¹). Report of five cases.” **2** (5), 265–277.
- b. HAUBRICH, W. S. & WELLS, R. M., 1957.—“Carcinoma coexisting with Manson's schistosomiasis.” **2** (6), 335–341.

(168a) Circulating erythrocytes were tagged with radio-active chromium in four cases of hookworm infection. The average intestinal blood loss daily was respectively 92 c.c., 99.3 c.c., 57.1 c.c. and 251.5 c.c. After iron therapy or blood transfusion, the relative faecal radio-activity decreased as the blood haemoglobin rose. In a case where no radio-chromium study was made and in which there was no response to transfusions or iron therapy, the blood haemoglobin rose after anthelmintic treatment.

R.T.L.

169—American Journal of Pathology.

- a. BATTEN, Jr., P. J., 1957.—“Histopathology of swimmers' itch. II. Some observations on the pulmonary lesions in the unsensitized mouse.” **33** (4), 729–735.

(169a) Batten has compared the pulmonary lesions caused by *Schistosomatium douthitti* and *Gigantobilharzia huronensis* in experimental infections in unsensitized mice. The gross and microscopical lesions were similar in each case but there was a paucity of pulmonary changes with *G. huronensis*. The first sign was congestion of the interalveolar capillaries which appeared 30 mins. after exposure and increased progressively during the first four days; there were also alveolar and bronchiolar haemorrhages which, where extensive, were accompanied by the appearance of tissue histiocytes containing haemosiderin. Many cercariae, all apparently alive at the time of the host's death, were demonstrable in the lungs of those mice infected with *S. douthitti* and there was no inflammatory reaction to them. It thus appears that those cercariae which pass the skin barrier elicit no inflammatory reaction when migrating through the lungs. No cercariae of *G. huronensis* were observed and this is attributed to the large numbers destroyed in the dermis and subcutaneous tissue. During the second and third weeks there was a diffuse, subacute interstitial pneumonitis.

S.W.

170—American Journal of Tropical Medicine and Hygiene.

- †a. STOLL, N. R., 1957.—“Symposium on helminthic infections as the cause of disability and disease. Introduction.” **6** (3), 399–401.

(170a) In this opening address, Stoll recalls that hookworm, *Ascaris* and whipworm account for almost three-quarters of all human helminth infections. He considers that with minor exceptions the worms of man are as numerous as ever. This can be attributed to our tendency to underestimate the difficulties involved, viz., the limitation of our tools, resistance of the worms and reversion of populations to old habits.

M.MCK.

† Paper presented at Symposium on Helminthic Infections as the Cause of Disability and Disease. Annual Meeting of the American Society of Tropical Medicine and Hygiene, New Orleans, Louisiana, November 1, 1956.

170—American Journal of Tropical Medicine and Hygiene (cont.)

- †b. KESSEL, J. F., 1957.—“Disabling effects and control of filariasis.” 6 (3), 402-414.
- †c. MARKELL, E. K., 1957.—“Discussion of Dr. John F. Kessel's paper.” 6 (3), 415.
- †d. SADUN, E. H., 1957.—“Fasciolopsiasis and opisthorchiasis as helminthic components of tropical public health.” 6 (3), 416-422.
- †e. CORT, W. W., 1957.—“Discussion of Dr. Elvio H. Sadun's paper.” 6 (3), 423.
- †f. POOLE, J. B., 1957.—“Echinococcus disease in northern North America.” 6 (3), 424-429.

(170b) Kessel illustrates on two maps the distribution and incidence of microfilariae and elephantiasis in man in the Pacific, Africa and Asia. As he was hampered in collecting these data by the lack of standardization in clinical, blood and mosquito surveys, he describes, as a guide for the future, the working details of such surveys in French Oceania. He lists the manifestations referable to filarial infection and considers elephantiasis, hydrocele and lymphangitis to be those of greatest significance. Figures which he quotes suggest that the incidence of elephantiasis in an area is related to microfilarial density rather than to the microfilarial infection rate. He gives a short discussion on the economic, disabling and psychological effects of filariasis, chiefly as observed by him in French Oceania, [for abstracts of the earlier reports of his work in French Oceania see Helm. Abs., 22, No. 20d and No. 296a, and 23, No. 976r], and notes that a rubber plantation in Malaya, employing 600 labourers, reported 150 attacks of filarial fever or lymphangitis a year, each lasting about three days. The paper ends with a summary of the procedures for effective control. M.MCK.

(170c) Recalling that in parts of Africa elephantiasis appears to be more common in the scrotum than the limbs but in Tahiti the limbs are more frequently affected, Markell notes that surveys in Tahiti covered virtually the entire population whereas in most parts of Africa statistics are chiefly of patients seen in hospital, and points out that a comparison of statistics from these two areas is almost impossible. He describes how the relation between microfilarial density and elephantiasis, observed by Kessel, may be expressed in terms of sensitivity to filarial infection. M.MCK.

(170d) With main reference to Thailand, Sadun discusses the symptoms and prevalence of *Fasciolopsis buski* and *Opisthorchis viverrini* and the transmission of this last species [for abstracts of accounts of his work on these species in Thailand see Helm. Abs., 22, No. 296c and 24, No. 327a]. He stresses how little the seriousness of worm infections in underdeveloped countries is realized and suggests that campaigns to improve nutritional and health standards are of limited value while such infections persist. M.MCK.

(170e) Cort suggests that more people may be found to suffer from liver-fluke disease due to *Opisthorchis viverrini* in its endemic areas, which extend from the Mekong River into north-west Viet Minh, than in all the endemic areas of *Clonorchis sinensis*. He emphasizes the difficulties of control as fish is the most important source of protein in these regions. R.T.L.

(170f) Poole reviews published work on hydatid disease in North America where, although it has previously been considered rare in man, it now appears to have a wide distribution and high incidence in the northern regions. He points out that modern high speed procedures in abattoirs prevent the detection of more than a small percentage of infected animals. In Canada about half the cysts occur in the lungs compared with about 10% in other countries where the disease is endemic, supporting the belief that more than one species is involved. The return of a transient white population from the Northland, where they may have become infected, to non-endemic areas may present a serious diagnostic problem. S.W.

† Paper presented at Symposium on Helminthic Infections as the Cause of Disability and Disease. Annual Meeting of the American Society of Tropical Medicine and Hygiene, New Orleans, Louisiana, November 1, 1956.

170—American Journal of Tropical Medicine and Hygiene (cont.)

- †g. SCHWARTZ, B., 1957.—“Discussion of Dr. John B. Poole's paper.” 6 (3), 430-432.
- †h. BEAVER, P. C., 1957.—“Wandering nematodes as a cause of disability and disease.” 6 (3), 433-437.
- †i. CHANDLER, A. C., 1957.—“Discussion of Dr. Paul C. Beaver's paper.” 6 (3), 438-440.
- †j. BROWN, H. W., 1957.—“Peripatetic parasitologist.” 6 (3), 441-454.
- †k. BOUGHTON, D. C., 1957.—“Helminth production in livestock: tonnage, carrying costs, and control.” 6 (3), 455-461.
- †l. FOSTER, A., 1957.—“Discussion of Dr. Donald C. Boughton's paper.” 6 (3), 462-463.
- †m. DAUGHERTY, J. W., 1957.—“The active absorption of certain metabolites by helminths.” 6 (3), 464-470.

(170g) In this discussion Schwartz stresses the low incidence of *Echinococcus granulosus* reported in dogs in the U.S.A.; the source of infection of cattle, sheep and pigs is therefore still somewhat of a mystery. In the years 1950 to 1956 the annual averages of cattle and calf livers condemned on account of hydatid cysts were 2,520 and 128 respectively but the real incidence is probably much higher. S.W.

(170h) Beaver summarizes our present knowledge of diseases caused by nematode larvae invading and wandering in human and animal tissues and lists the species which have been implicated to date. A number of disease conditions of unknown or doubtful aetiology may be due to wandering nematodes; creeping eruption, visceral larva migrans and cerebrospinal nematodiasis have all been shown to be of nematode origin; tropical eosinophilia appears likely to be due to nematode larvae in the lungs or other organs. The possibility of their introducing other infections must not be overlooked. S.W.

(170i) In discussing Beaver's paper Chandler draws attention to work on the importance, in visceral larva migrans, of the size of the invading larvae and to the possibility that sensitization by previous exposure may be responsible for the difference in the degree of damage caused in individuals; as Beaver has observed, in some persons heavy infections are relatively innocuous whereas in others few larvae cause very severe damage. S.W.

(170j) Brown describes his tour in East and West Africa, the Near and Middle East and South America with particular reference to his observations on parasitic diseases. Schistosomiasis and onchocerciasis are among the most serious and as yet there is no satisfactory means of control. Ascaris, Trichuris and hookworm were also wide-spread in many areas visited. S.W.

(170k) Boughton estimates that the 55 million pigs, 95 million cattle and 31 million sheep in the U.S.A. produce annually 13,685,000 pounds of parasitic nematodes with consequent loss in value of the livestock. In livestock production the classical division into sick and well is unsatisfactory, inefficiency in production being of greater importance than sickness *per se*. He discusses preventive control and shows that phenothiazine, although not a true prophylactic as it acts only after the first infection, is of great value in control when given in small daily doses as it exerts a suppressive effect on the eggs and larvae of the nematodes of sheep, goats, horses and cattle. The paper is illustrated by tables. S.W.

(170l) Foster considers, while subscribing to Boughton's opinions, that the great need in parasitology is less concern about applied problems and more about the development of principles. The economic loss suffered is not more challenging than the underlying, unsolved problems of parasitism. S.W.

(170m) Daugherty showed that the uptake of cystine by *Hymenolepis diminuta* in vitro was strongly affected by temperature. Aspartic, glutamic and α -ketoglutaric acids when added to the medium did not affect the uptake, whereas serine, valine, glycine, lysine and methionine inhibited strongly. Similar results were obtained when the uptake of methionine was studied. W.P.R.

† Paper presented at Symposium on Helminthic Infections as the Cause of Disability and Disease. Annual Meeting of the American Society of Tropical Medicine and Hygiene, New Orleans, Louisiana, November 1, 1956.

170—American Journal of Tropical Medicine and Hygiene (cont.)

- †n. GOODCHILD, C. G., 1957.—“Discussion of Dr. Jack Daugherty's paper.” 6 (3), 471-472.
- †o. LEWERT, R. M. & LEE, C. L., 1957.—“The collagenaselike enzymes of skin-penetrating helminths.” 6 (3), 473-477.
- †p. THORSON, R. E., 1957.—“Discussion of the paper by Doctors Lewert and Lee.” 6 (3), 478-479.
- †q. WEINSTEIN, P. P. & JONES, M. F., 1957.—“The development of a study on the axenic growth in vitro of *Nippostrongylus muris* to the adult stage.” 6 (3), 480-484.
- †r. READ, C. P., 1957.—“Discussion of the paper by Drs. Weinstein and Jones.” 6 (3), 485-486.
- s. MARKELL, E. K. & TURNER, J., 1957.—“Cortisone and prednisone in the suppression of allergic reactions to diethylcarbamazine treatment of onchocerciasis.” 6 (3), 546-552.

(170n) Goodchild discussed Daugherty's paper in general terms and then suggested that the competitive effects of ketogenic amino-acids should be examined. W.P.R.

(170o) Lewert & Lee outline their studies of the mechanisms involved in the penetration of tissues by helminths. During penetration of the skin by cercariae of *Schistosoma mansoni* or larvae of *Strongyloides ratti* histological changes occurred, including the disappearance of the basement membrane, the formation of water-soluble glycoprotein in the dermal ground substance and an increase in free water of the ground substance. In older rats and mice increased polymerization of acellular elements of the connective tissue was associated with a decrease in the ability of the larvae to penetrate the skin. The enzymes produced by the larvae had an activity similar to that of *Clostridium welchii* collagenase and their properties are described. The inhibitory effect of various sera on the enzymes has been investigated and it has been shown that human sera from persons infected with *Schistosoma mansoni* inhibited the enzymes partly and in some cases completely. S.W.

(170p) Thorson, discussing the paper by Lewert & Lee, draws attention to the importance of the demonstration of the increased polymerization of the acellular skin layers as one factor in the development of age immunity, and the difficulties involved in the characterization of the enzymes which are active in penetration. He also asks if the inhibitory action of immune and some normal sera on the schistosome enzymes is likely to be due to the presence of different substances or different quantities of the same substance. S.W.

(170q) Weinstein & Jones describe the various stages in their work on the *in vitro* cultivation of *Nippostrongylus muris*, the different media tested, the investigation of the growth-promoting substances and their final success in achieving development to sexually mature adults in eight to ten days in a medium containing a high concentration of chick embryo extract and mammalian serum. S.W.

(170r) Commenting on the paper by Weinstein & Jones, Read compares their observations with those made by Haley on infection of hamsters with *Nippostrongylus muris*. He found that whereas very few larvae from the rat strain complete their development normally in hamsters, a significant proportion does so if rat serum is injected into the hamsters 24 hours after infection; also, after repeated passage through hamsters the nematodes became adapted to this host. It is also of great interest that the chick embryo extract is so efficacious for complete development. S.W.

(170s) After preliminary trials with cortisone, Markell & Turner have investigated the efficacy of prednisone in suppressing the allergic reactions which often result from the use of hetrazan in the treatment of onchocerciasis. Forty persons with positive skin biopsies were treated: of 19 treated with prednisone and diethylcarbamazine only four showed allergic reactions compared with 16 of 21 treated with diethylcarbamazine and a placebo. A second group of 20 persons with negative skin biopsies was treated in the same way with similar results. S.W.

† Paper presented at Symposium on Helminthic Infections as the Cause of Disability and Disease, Annual Meeting of the American Society of Tropical Medicine and Hygiene, New Orleans, Louisiana, November 1, 1956.

170—American Journal of Tropical Medicine and Hygiene (cont.)

- t. MARKELL, E. K. & LEWIS, W. P., 1957.—“Effect of cortisone treatment on immunity to subsequent reinfection with *Trichinella* in the rat.” 6 (3), 553–561.
- u. SADUN, E. H., NORMAN, L. & ALLAIN, D., 1957.—“The detection of antibodies to infections with the nematode, *Toxocara canis*, a causative agent of visceral larva migrans.” 6 (3), 562–568.
- v. PIMENTEL, D., WHITE, P. C. & ILDEFONSO, V., 1957.—“Vagility of *Australorbis glabratus*, the snail intermediate host of *Schistosoma mansoni* in Puerto Rico.” 6 (3), 576–580.
- w. FOX, R. M., 1957.—“*Anopheles gambiae* in relation to malaria and filariasis in coastal Liberia.” 6 (4), 598–620.
- x. MILLER, M. J., 1957.—“A survey of *Schistosoma haematobium* infections in man in Liberia.” 6 (4), 712–714.

(170t) Markell & Lewis infected 60 rats with *Trichinella* larvae and administered cortisone daily to 20 of them for 30 days and to 20 for 60 days. Five months after the first infection half of each group was reinfected. All the rats were killed five weeks later and examined serologically and for larvae. The numbers of larvae from the primary infection in the muscles of those which had received cortisone for 30 days were only slightly greater than in the controls but in those treated for 60 days the numbers were very much greater. On reinfection no larvae developed in the controls but both groups of treated rats had large and approximately equal numbers of larvae in the musculature. Microflocculation tests, using lyophilized larvae as antigen, demonstrated circulating antibodies in the controls after the first infection and higher titres after reinfection. Those treated with cortisone for 30 days developed a high titre of circulating antibodies but none was demonstrable in those treated for 60 days. The interpretation of these results is discussed. S.W.

(170u) Sadun and his colleagues have performed a number of experiments which, it is hoped, will lead to the development of serological means for the laboratory diagnosis of visceral larva migrans. They have shown that with *Toxocara canis* specific antibodies are produced following both active infection and passive immunization by the intramuscular administration of antigenic material adsorbed on to aluminium hydroxide; these are detected more consistently by flocculation than by complement fixation or precipitin tests. Experiments in rabbits indicated that the antibodies could be detected within a relatively short time of exposure to infection. Extensive tests with human and animal sera with other infections indicated that there was little or no cross reaction except with *Ascaris lumbricoides*. S.W.

(170v) Pimentel *et al.* released 11,307 marked *Australorbis glabratus*, 8 mm. to 29 mm. in diameter, into the upper end of a stream. The greatest movement away from the points of release took place during the first 24 hours, the average distance being 6 feet either up or downstream. By the second week the average distances were 19 feet upstream and 23 feet downstream and the snails then remained in the same general distribution for the remaining five weeks of the experiment. Flood waters, the adherence of small snails to the legs of aquatic birds and animals and oviposition on aquatic insects aided in the transference of snails from one stream to another. S.W.

(170w) Dissections of 5,566 *Anopheles gambiae* in Marshall territory, on the coast of Liberia, gave 3.6% as the over-all rate of infection with third-stage filariae presumed to be *Wuchereria bancrofti*. The over-all monthly rate and the rate of infection in the mosquitoes collected in 11 villages are tabulated. The rates of infection were lowest in the dry season and highest near tidal rivers, reaching the peak rate of 6.71% at Snafu village on the Gboe river and diminishing inland. The three collecting methods, hand catching on human bait in the open, trapping with human bait, and hand catching of resting mosquitoes in huts gave similar results. R.T.L.

(170x) The distribution of *Schistosoma haematobium* in Liberia was ascertained by examining the urine of 3,429 individuals recruited from different parts of the country for work on rubber plantations and a mining centre in an area where schistosome infection was unknown. The results, shown on a map, indicated that the whole of the Eastern Province and the coastal

170—American Journal of Tropical Medicine and Hygiene (cont.)

- y. WHITE, Jr., P. C., PIMENTEL, D. & GARCIA, F. C., 1957.—“Distribution and prevalence of human schistosomiasis in Puerto Rico in 1953.” 6 (4), 715-726.
- z. CHAFFEE, E. F. & NIEVES, E. E., 1957.—“Serodiagnosis of schistosomiasis: specificity of the complement-fixation test in other helminthic infections.” 6 (4), 727-730.
- ba. ARMBRUST, A. F., 1957.—“Rare histopathologic aspects of Manson's schistosomiasis.” 6 (4), 731-738.
- bb. LICHTENBERG, F. & MEDINA, R., 1957.—“Bancroftian filariasis in the etiology of funiculoepididymitis, periorchitis and hydrocele in Puerto Rico (statistical study of surgical and autopsy material over a 13-year period).” 6 (4), 739-751.
- bc. TARIZZO, M. L., 1957.—“Saudi Arabia—epidemiological notes on the Eastern Province.” 6 (5), 786-804.

half of the Central and Western Provinces were apparently free from infection. The highest incidence was obtained between the St. Paul and St. John rivers in the upper part of the Central Province, and in some groups of labourers from this area it reached 67%. Eggs of *S. mansoni* were seen in about 0.3% of all the urine specimens examined.

R.T.L.

(170y) This study of the incidence and geographical distribution of human infections with *Schistosoma mansoni* in Puerto Rico is based on a survey of over 10,000 schoolchildren in 17 municipalities and the distribution of the vector *Australorbis glabratus* in various physiographic, climatic regions and aquatic environments. The results are tabulated. The over-all average of schistosome infection was 10%. Of the children at Rio Bairoa 78.6% were positive. There was no significant difference in the rates of infection between those dwelling in rural and urban areas. The incidence of schistosome infection was directly related to the abundance of *A. glabratus*.

R.T.L.

(170z) In a study on the possible effect of other helminth infections on the specificity of the complement-fixation test for schistosomiasis, using a buffered saline extract of *Schistosoma mansoni* adults extracted with ether, two out of eight Japanese infected with *Paragonimus westermanii* and two out of 69 Puerto Rico natives without overt schistosomiasis reacted, while 39 Trinidad natives with only nematode infections were negative.

R.T.L.

(170ba) The following rare and hitherto unreported histopathological conditions due to *Schistosoma mansoni* are recorded. Adult worms were found in greatly distended veins in the lower end of the oesophagus and schistosome tubercles in the interfollicular fibrous tissue of the thyroid gland. Eggs in two cases and worms in one case were found in the spleen. Intra-bronchial schistosomiasis was observed in a case of schistosomal cor pulmonale. In a few instances eggs and adults were present in the pancreas, eggs in the walls of the stomach and duodenum, and schistosomal granulomata in the prostate. In one case eggs were observed in the zona fasciculata of the adrenals.

R.T.L.

(170bb) Although filariasis is a prominent cause, the high incidence of funiculoepididymitis, periorchitis and hydrocele in Puerto Rico is related to multiple aetiological factors, e.g. thrombophlebitis, bacterial superinfection or testicular damage. No secondary tissue changes pathognomonic of filariasis were recognizable.

R.T.L.

(170bc) These notes on the health conditions in the Eastern Province of Saudi Arabia are based on data from the medical services of the Arabian American Oil Company. The parasitological findings in 115,707 routine stool examinations during 1951-54 are tabulated. Although no foci of schistosomiasis could be detected, *Schistosoma mansoni* occurred in 1.5% of the faeces examined. Hookworm ova were present in 1% but probably some of these were *Trichostrongylus* sp. as no adults could be found. Other eggs found were *Ascaris lumbricoides* 13.7%, *Trichuris trichiura* 14.3%, *Strongyloides stercoralis* 0.2%, *Hymenolepis nana* 0.6% and *Taenia* sp. 0.4%. *Heterodera* sp. eggs were found once. Seven cases of guinea-worm were admitted to hospital between 1950 and 1956 but the actual locality in which the infection had been acquired was uncertain. *Echinococcus granulosus* frequently occurred in camels, sheep and goats and occasionally in man. In this region, where *Limnaea* sp. abound, *Fasciola hepatica* was found in sheep.

R.T.L.

170—American Journal of Tropical Medicine and Hygiene (cont.)

- bd. FRYE, W. W., SWARTZWELDER, C., LAMPERT, R., ABADIE, S. H. & CARSON, Jr., C. B., 1957.—“An effective trichuricide suitable for oral administration.” *6* (5), 890–893.
- be. McCOWEN, M. C., CALLENDER, M. E. & BRANDT, M. C., 1957.—“The anthelmintic effect of dithiazanine in experimental animals.” *6* (5), 894–897.
- bf. NORTON, S. & DE BEER, E. J., 1957.—“Investigations on the action of piperazine on *Ascaris lumbricoides*.” *6* (5), 898–905.
- bg. BIAGI F., F. & PORTILLA, J., 1957.—“Comparison of methods of examining stools for parasites.” *6* (5), 906–911.
- bh. MUIRHEAD-THOMSON, R. C., 1957.—“The development of *Onchocerca volvulus* in laboratory-reared *Simulium damnosum* Theobald.” *6* (5), 912–913.
- bi. BECK, J. W. & GARRETT, F. D., 1957.—“A preliminary report on a perfusion technique for recovering schistosomes at time of autopsy.” *6* (5), 914–919.
- bj. KUNTZ, R. E., 1957.—“Relationship of temperature to molluscicidal activity.” *6* (5), 940–945.

(170bd) Following on McCowen's observation that 3,3'-diethylthiadicarbocyanine iodide had an anthelmintic action on ascarids, hookworms and whipworms in the dog, the authors have found that it is effective against *Trichuris trichiura* in man. Only two out of 16 patients, one month after receiving by the mouth 200 mg. thrice daily for five days and only five out of 17 who received the same dose but twice daily for five days, showed *Trichuris* eggs in their faeces. The associated dysentery ceased after a few days. The whipworms were passed in large numbers after only one day's treatment. *Ascaris lumbricoides* were also eliminated.

R.T.L.

(170be) Dithiazanine (3,3'-diethylthiadicarbocyanine iodide) proved very effective against *Syphacia obvelata* and *Aspiculuris tetraptera* when added to the diet of infected mice. Swartzwelder in a personal communication to the authors states that it is also effective against *Strongyloides ratti*. Dogs and cats became negative for *Ascaris* and hookworm after receiving 10 mg. per kg. body-weight of the drug in capsules for four days, and those dogs also infected with *Trichuris* became negative.

R.T.L.

(170bf) Evidence is submitted that the paralysis produced in *Ascaris* by piperazine is caused by blocking the neuro-muscular junction.

R.T.L.

(170bg) The numbers of eggs of 10 different helminth species found in faeces by direct smear and by the Faust, Bayona and Ferreira techniques are tabulated for comparison. The Ferreira method revealed the greatest number of positives and was found to be particularly effective when the number of eggs in the faecal samples was small.

R.T.L.

(170bh) Muirhead-Thomson has succeeded in feeding in captivity laboratory-reared *Simulium damnosum* on a human subject infected with *Onchocerca volvulus* and has kept the flies alive long enough for the ingested microfilariae to develop to the infective stage. This took seven days in the dry and hot season and nine days in the cooler rainy season. The hungry female flies were transferred to a cylindrical tube 6 in. by 1½ in., with the end covered by cotton mosquito netting, through which the flies fed when applied to the patient's skin. The engorged flies were then kept in 2,000 ml. beakers provided with filter paper and cotton wool soaked in sterile sugar solution.

R.T.L.

(170bi) Beck & Garrett describe experiments on a series of human cadavers in which the perfusion technique was applied selectively and based on the distribution of the larger portal and arterial branches. They consider that their technique if applied to cases of schistosomiasis would enable the total worm burdens and that of selected areas of the body to be determined.

R.T.L.

(170bj) In support for his plea for the more general recognition of the practical and economic importance of temperature in planning snail control programmes, Kuntz submits experimental data showing that activity of DCHP (dinitro-*o*-cyclohexylphenol), NPCP (sodium pentachlorophenate) and copper sulphate against *Biomphalaria boissyi* in Egypt is greatly increased with the elevation of temperature.

R.T.L.

170—American Journal of Tropical Medicine and Hygiene (cont.)

- bk. WAGNER, E. D. & WONG CHI, L., 1957.—“Egg-laying inhibition in *Oncomelania nosophora* maintained on filter paper.” 6 (5), 946–948.
- bl. WONG CHI, L. & WAGNER, E. D., 1957.—“Studies on reproduction and growth of *Oncomelania quadrasi*, *O. nosophora*, and *O. formosana*, snail hosts of *Schistosoma japonicum*.” 6 (5), 949–959.

(170bk) *Oncomelania nosophora* kept on moist filter paper alone do not lay eggs. This may be due to lack of soil with which to form a protective capsule or to inadequacies of the diet. Apparently the female is able to retain her eggs for long periods. R.T.L.

(170bl) These studies on the life-histories of three species of *Oncomelania* provide additional data on the frequency and number of eggs laid, the incubation period and sizes of the eggs, the sizes of the newly hatched snails, their growth curves and the number of young snails produced by laboratory-raised females mated only once. R.T.L.

171—American Journal of Veterinary Research.

- a. SIMPSON, C. F., WADE, A. E., DENNIS, W. R. & SWANSON, L. E., 1957.—“Pathological changes associated with *Dictyocaulus viviparus* (Bloch) infections in calves.” 18 (69), 747–755.
- b. DRUDGE, J. H., LELAND, Jr., S. E., WYANT, Z. N., ELAM, G. W., SMITH, Jr., C. E. & DALE, Jr., E., 1957.—“Critical tests with piperazine-carbon disulfide complex (Parvex) against parasites of the horse.” 18 (69), 792–797.
- c. LELAND, Jr., S. E., DRUDGE, J. H., WYANT, Z. N. & ELAM, G. W., 1957.—“Strain variation in the response of sheep nematodes to action of phenothiazine. III. Field observations.” 18 (69), 851–860.
- d. KUME, S., 1957.—“Chemotherapy of canine filariasis.” 18 (69), 912–923.

(171a) Simpson *et al.* have studied three forms of *Dictyocaulus viviparus* infection in calves, namely, initial infections, recovered cases and recovered cases subsequently challenged with viable larvae. They describe the clinical changes and gross and microscopical lesions in each case and record the faecal larval counts. The microscopical lesions are illustrated by photomicrographs. In the fatal cases the respiratory symptoms were caused by large quantities of froth, mixed with immature lungworms, throughout the respiratory passages. Alveolar and interstitial emphysema were evident microscopically. Cases of long duration were characterized by extensive consolidation of the lung accompanied by pleural and interlobular oedema and cuffing of the bronchi and bronchioles by lymphocytes. The pneumonic condition extended through entire or almost entire lobes. The recovered cases when challenged showed no clinical signs of disease and no living lungworms were found in the lungs post mortem, although there were chronic inflammatory changes in the bronchioles and alveolar septal walls with peribronchiolar hyperplasia. Dead larvae were observed in the mediastinal lymph node. S.W.

(171b) The authors have investigated the efficacy of Parvex against intestinal parasites of the horse. Doses of 75 mg., 100 mg., 150 mg. and 200 mg. per kg. body-weight were tested. Ascarid infections were completely eliminated by 75 mg. per kg., indicating that this compound is effective at about half the dose level for other piperazine compounds. Doses of 100 mg. per kg. removed 89%, to 98% of the small strongyles. There was only slight activity against *Strongylus vulgaris* and even 200 mg. per kg. was not effective against *S. edentatus*. There appeared to be no activity against *Trichostrongylus axei* and *Habronema muscae*. S.W.

(171c) Leland and his co-workers have followed up their laboratory investigations of the development of resistance to phenothiazine by sheep nematodes [for abstracts see Helm. Abs., 26, Nos. 5c & 5f] by observations extending over 18 months on three farms in central Kentucky. Seven graphs illustrate their findings. On farm K drenching with copper and nicotine sulphates reduced the faecal egg counts in each case; when phenothiazine-salt mixture was available there was a high average egg count although larval development was reduced. On

farm S effective reduction in average egg counts was obtained solely by drenching with phenothiazine. On farm B, where there was a 10-year history of phenothiazine treatment, drenching with the same commercial preparation and dose rate as that used with success on farm S was an apparent failure and only the copper and nicotine sulphate drench was consistently effective. Although these observations would not justify the general discontinuance of phenothiazine drenches or salt mixtures they do suggest the advisability of alternating them with cunic drenches.

S.W.

(171d) Kume has tested a large number of compounds for the treatment of *Dirofilaria immitis* in dogs. Organic arsenicals were the only substances which acted on the adult worms and, of these, dichlorophenarsine hydrochloride, which has not previously been used for this infection was the most satisfactory; three daily doses of 1.0 mg. of arsenic per kg. body-weight was very effective and well tolerated. He has confirmed that organic antimonials and substituted piperazines act chiefly, if not entirely, on the microfilariae. Acriflavine, naphthalene, formalin and organic mercury or bismuth compounds showed no evidence of activity.

S.W.

172—American Midland Naturalist.

- a. BACHOFER, C. S., 1957.—“Effects of ionizing and non-ionizing radiations on pronuclear fusion, cleavage, and embryogenesis of *Ascaris* eggs.” 58 (1), 155–169.
- b. MORAN, Jr., J. F. & MIZELLE, J. D., 1957.—“Studies on *Ascaridia galli* (Schrank, 1758).” 58 (1), 170–181.

(172a) Bachofer's studies showed that X-rays and ultra-violet irradiation of the eggs of *Ascaris lumbricoides suum* caused delay in the fusion of pronuclei, first cell cleavage and development of ova into motile embryos and revealed that deoxygenation and incubation for 24 hours after irradiation before aerobic incubation shortened the time required. His experiments indicate that probably the anerobic synthesis of proteins and other substances may be necessary for recovery of the damaged cell.

R.T.L.

(172b) Infective eggs of *Ascaridia galli* hatch within half-an-hour of infection in the intestine but not in the crop, proventriculus or gizzard of domestic chickens. The newly hatched larvae are thick bodied, have a long rhabditiform oesophagus and measure, on the average, 0.32 mm. in length. The second moult occurs six to eight days and the third moult 14 to 16 days after hatching. Many larvae fail to attain sexual maturity in 50 days and remain in a static condition in the mucus lining the intestine for a considerable time. The posterior third of the intestine, especially that section three to five inches on either side of the yolk-sac diverticulum, is a significant and hitherto overlooked habitat of the larvae. Only 0.41% of the larvae penetrated the intestinal mucosa. The vast majority undergo their larval development free and in the mucus.

R.T.L.

173—Animal Health Leaflet. Ministry of Agriculture, Fisheries and Food. London.

- a. ANON., 1957.—“Worms in poultry.” No. 22, 4 pp. [Revision of 1954 Leaflet.]

174—Annalen des Naturhistorischen Museums in Wien.

- a. KRITSCHER, E., 1957.—“*Echinorhynchus impudicus* Diesing 1851 - *Paracavisoma* nov. gen. *impudica* (Diesing) 1851 (Palaeacanthoceph., Echinorhynchidae).” 61, 273–277.

(174a) As part of a revision of the Acanthocephala in the Vienna Natural History Museum, Kritscher redescribes male and female specimens of *Echinorhynchus impudicus* Diesing, 1851. He creates *Paracavisoma* n.g. for this species which is placed in the subfamily Cavisominae of the Echinorhynchidae. The new genus differs from *Cavisoma*, the other member of the subfamily, in having more numerous hooks on the proboscis (24 longitudinal rows of 24–26 each), in having lemnisci of equal length and only a little more than half as long as the proboscis sheath, and in having the nerve mass near the anterior end of the proboscis sheath.

A.E.F.

175—Annales de Médecine Vétérinaire.

- a. HERIN, V. & THIENPONT, D., 1957.—“ Sur un essai de traitement de la ladrerie bovine et porcine par l'huile thymolée en injection intramusculaire.” **101** (2), 141-146.

(175a) A 50% solution of oil and thymol injected intramuscularly was ineffective against *Cysticercus bovis* and produced undesirable effects in five calves given doses of 10-15 c.c. for several weeks (altogether 11 to 22 injections). A similar type of treatment given to three pigs with cysticerciasis was also ineffective. M.MCK.

176—Annales de la Société Belge de Médecine Tropicale.

- a. MOONS, H., 1957.—“ Note à propos du traitement de larva migrans.” **37** (4), 559-560. [English, German, Spanish & Flemish summaries p. 560.]

(176a) Creeping eruption in three European children, in the Belgian Congo, which had resisted treatment by freezing and electro-coagulation were healed, spectacularly, by a single application of D.D.T. powder. R.T.L.

177—Annales Universitatis Scientiarum Budapestinensis de Rolando Eötvös Nominatae. Sectio Biologica.

- a. ANDRÁSSY, I., 1957.—“ Über die Gattung *Chronogaster* Cobb, 1913 (Nematoda, Plectidae).” **1**, 3-12. [Russian summary p. 11.]

(177a) *Chronogaster gracilis* and *C. typicus* are redescribed and figured. *C. magnificus* and an unnamed but figured species are also referred to. A key to the 3 (?4) species is given and the genus is placed in the family Plectidae instead of the Camacolaimidae as by Goodey (1951). J.B.G.

178—Annali della Sanità Pubblica.

- a. COCUZZA, S., 1957.—“ Ricerche epidemiologiche e considerazioni su un focolaio di anchilostomiasi in provincia di Pistoia.” **18** (1), 135-139. [English, French, German & Spanish summaries pp. 138-139.]

179—Annals of Applied Biology.

- a. BRADBURY, F. R., CAMPBELL, A., SUCKLING, C. W., JAMESON, H. R. & PEACOCK, F. C., 1957.—“ The nematocidal properties of azides.” **45** (2), 241-250.
 b. WALLACE, H. R., 1957.—“ The stimulatory properties of some organic substances on cysts of the beet eelworm, *Heterodera schachtii* Schmidt.” **45** (2), 251-255.
 c. STONE, L. E. W., 1957.—“ Observations on the control of potato-root eelworm (*Heterodera rostochiensis* Wollenw.) under glass by D-D and solubilized *p-m* cresol.” **45** (2), 256-260.

(179a) Azides were found to be effective nematocides in laboratory, green-house and field trials. When vinegar eelworms were suspended in solutions of sodium azide with a pH range of 2 to 6, the toxicity of a given azide concentration increased as pH decreased. The azides were also shown to be more effective in acid soils. The biological activity of azides was found to be due to undissociated hydrazoic acid which is only liberated in effective quantity in acid soils. Organic acid azides are decomposed by a wide range of dust diluents and by soil. The authors conclude that owing to the rapid volatilization and decomposition of sodium azide in soil, and several practical disadvantages, it is doubtful whether azides will prove to be practical and economical nematocides. H.R.W.

(179b) No significant difference was found between the rates of larval emergence of beet eelworm larvae in glutamic acid, galactinol, inositol and water; a high rate of emergence occurred in beet diffusate. Results of larval emergence experiments in carbohydrates suggest that the cyst population was heterogeneous consisting of two types of cyst which have different reactions to stimulation at different concentrations. H.R.W.

(179c) For the control of *Heterodera rostochiensis*, injection of D-D mixture at 400 lb. per acre in a light loam in two glass-houses gave an estimated percentage kill of 93.9 and 91.5 respectively in 0-9 inch soil layer. When tomatoes were grown in the treated soil the population increased to about 1.75 times its original level. Tomatoes grown in pots on the surface of the treated soil resulted in an over-all fall in eelworm population to about one-seventh of its original value. Combined treatments, using solubilized cresols as a surface seal increased the kill in the 0-3 inch layer.

H.R.W.

180—Annals of Tropical Medicine and Parasitology.

- a. McCULLOUGH, F. S., 1957.—"The seasonal density of populations of *Bulinus* (*Physopsis*) *globosus* and *B. forskalii* in natural habitats in Ghana." 51 (3), 235-248.
- b. TURNER, L. H. & EDESON, J. F. B., 1957.—"Studies on filariasis in Malaya: the periodicity of the microfilariae of *Wuchereria malayi*." 51 (3), 271-277.
- c. WHARTON, R. H., 1957.—"Studies on filariasis in Malaya: observations on the development of *Wuchereria malayi* in *Mansonia* (*Mansonioides*) *longipalpis*." 51 (3), 278-296.
- d. WHARTON, R. H., 1957.—"Studies on filariasis in Malaya: notes on the breeding of *Mansonia* (*Mansonioides*) mosquitoes in the laboratory." 51 (3), 297-300.
- e. YEH, L. S. & JORDAN, P., 1957.—"On a new gordiid worm, *Pseudogordius tanganyikae* gen. et sp. nov., parasitic in man." 51 (3), 313-316.
- f. SANDARS, D. F., 1957.—"Redescription of some cestodes from marsupials. I. Taeniidae." 51 (3), 317-329.
- g. SANDARS, D. F., 1957.—"Redescription of some cestodes from marsupials. II. Davaineidae, Hymenolepididae and Anoplocephalidae." 51 (3), 330-339.
- h. LEWIS, D. J., 1957.—"Aspects of the structure, biology and study of *Simulium damnosum*." 51 (3), 340-358.

(180a) Fortnightly observations on the population densities of *Bulinus* (*Physopsis*) *globosus* and *B. forskalii* in their natural habitats at Pokloasi in Ghana were made over a period of fourteen months. Drying, flooding, seasonal changes in aquatic vegetation and competition with other molluscs were apparently the principal factors involved. The monthly variations in numbers of *B. (P.) globosus* in different age groups are tabulated. Whereas this species oviposits throughout the year and repopulates an area to the original levels in less than two months, *B. forskalii* is sporadic and appears in large numbers after heavy rains. The data collected indicate that, in Ghana, molluscicides would be most effective if applied during the dry season between December and April.

R.T.L.

(180b) The periodicity of the microfilariae of *Wuchereria malayi* in Pahang and Perak, where the main vector is *Mansonia longipalpis*, is strikingly different from that in Penang and Kedah, where the main vectors are night-biting anophelines, but it is not absolute. It is suggested that although the microfilariae are indistinguishable the adults may belong to different species.

R.T.L.

(180c) Wharton has studied the migration of the microfilariae of *Wuchereria malayi* in *Mansonia longipalpis* at intervals after feeding and finds that they penetrate the stomach wall, enter the abdominal cavity and migrate forward to the thorax, reaching the head within 15 minutes. The cardiac region of the mid-gut is not an important penetration area. The mean number of microfilariae ingested per mosquito is greater than would be expected from the number in the peripheral blood. The proportion of mosquitoes which pick up an infection can be rapidly estimated if mosquitoes caught biting the previous night are searched next morning for exsheathed microfilariae in the thorax and abdomen while the number present in individual mosquitoes will indicate the intensity of infection. Such a survey made before and after mass treatment of the local population by diethylcarbamazine should give a clear indication of the effectiveness of the drug in reducing the infectivity of the population to mosquitoes.

R.T.L.

(180e) A female of *Pseudogordius tanganyikae* n.g., n.sp., reputed to have been passed per urethram by a five-year-old European child at Mwanza, Tanganyika Territory, is tentatively placed in the subfamily Paragordiinae. It differs from *Paragordius* in having two types

of areolae, large polygonal areolae darker than the smaller more numerous colourless areolae. There is a small postero-ventral lobe in addition to the three large lobes. R.T.L.

(180f) Sandars redescribes in detail and figures *Anoplotaenia dasyuri* Beddard, 1911 and *Dasyurotaenia robusta* Beddard, 1912 and redefines the two genera. *D. robusta*, previously known only in the Tasmanian devil *Sarcophilus harrisi*, is recorded for the first time in the marsupial cat *Dasyurus maculatus* in Tasmania. R.T.L.

(180g) Sandars after redescribing *Raillietina* (*Paroniella*) *macropa* and recording its presence in a new host, the wallaby *Thylogale wilcoxi* from Mount Tamborine, in South Australia, makes it the type of a new genus *Calostaurus* differentiated from *Raillietina* by the rostellum which not only has a remarkable shape but has an extremely well developed muscular band beneath the rows of rostellar hooks. Moreover the egg capsules are embedded in loose cellular tissue replacing the uterus. *Hymenolepis peramehidarum* in *Perameles nasuta* from South Queensland, *Oochoristica bivittata* in *Didelphis marsupialis insularis* from the West Indies, *Progamotaenia bancrofti* in *Protemnodon bicolor* from South Queensland and in *Setonix brachyurus* from Western Australia are new host records. A damaged specimen of *Progamotaenia* from *Setonix brachyurus*, Western Australia, may prove to be a new species. R.T.L.

(180h) Lewis describes the morphology of *Simulium damnosum* and the methods of collecting, breeding and dissecting this vector of human onchocerciasis. R.T.L.

181—Annual Review. Canterbury Agricultural College, New Zealand.

- a. MORRISON, L., 1957.—“New records of eelworm infestation of lucerne and of *Agropyron scabrum*.” Year 1956–57, pp. 62–63.

(181a) Eelworms from stunted lucerne plants, with dead portions around the outside and a rosette appearance in the centre which formed a mat close to the ground, were noticed in 1956 in a lucerne stand planted with Marlborough seed in 1952 on the south bank of the Rakaia River. Similar symptoms have been observed in old paddocks of lucerne throughout the Ashburton-Methven area of South Island, New Zealand. The eelworm has since been identified by J. B. Goodey as the lucerne race of *Ditylenchus dipsaci*. Elongated galls from the galled flower heads of the blue-stemmed wheat grass, *Agropyron scabrum*, were caused by a species of *Anguina* slightly different from *A. tritici* in some of the body structures. R.T.L.

182—Anzeiger für Schädlingkunde.

- a. IMMEL, R., 1957.—“Schadaufreten von Nematoden in Forstpflanzgärten.” 30 (6), 88–90.

(182a) Damage attributed to nematodes is described and figured for *Pinus sylvestris*, *Pseudotsuga douglasii* and *Picea excelsa*. The roots were stunted and knobbed and the shoots dwarfed. The nematodes involved are not named but it is suggested that they may have been tylenchids or dorylaims. J.B.G.

183—Archives Belges de Dermatologie et de Syphiligraphie.

- a. DUBOIS, A., 1957.—“Manifestations cutanées des filarioses.” 12 (4), 411–425. [English & Flemish summaries pp. 424–425.]

(183a) Dubois briefly reviews the species of filariae which parasitize man and deals in greater detail with those causing skin manifestations. *Loa loa* and *Onchocerca volvulus* are the two of greatest interest to the dermatologist. The various microfilariae and a section through an *Onchocerca* nodule, showing gravid females, are illustrated by photomicrographs. S.W.

184—Archivio Italiano de Scienze Mediche Tropicali e di Parassitologia.

- a. CONGIU, S. & SOBRERO, L., 1957.—“La *Setaria equina* (Abilgaard, 1789) e la sua microfilaria nell'asino somalo.” 38 (2), 101-110.
- b. LIPPI, M., 1957.—“La terapia medica della echinococcosi dell'uomo. Rivista sintetica.” 38 (3), 134-144. [English, French & German summaries pp. 143-144.]
- c. EGIDIO, M. DI, 1957.—“Osservazioni radiologiche sulla bilharziosi intestinale nello Yemen.” 38 (6), 311-327. [English, French & German summaries pp. 326-327.]

(184a) Congiu & Sobrero describe and illustrate with photomicrographs (i) microfilariae of *Setaria equina* which were observed for the first time in Somalia in two donkeys and (ii) adults found beneath the Glisson's capsule of a donkey which was extremely emaciated when it died.

M.MCK.

185—Atti della Accademia Nazionale dei Lincei. Rendiconti. Classe di Scienze Fisiche, Matematiche e Naturali. Rome.

- a. BIOCCA, E. & LEROUX, P. L., 1957.—“Su un nuovo genere (*Angulocirrus* gen.nov.) e su due nuove specie di tricostrongilidi (*Angulocirrus orycteropi* sp.nov., *Angulocirrus minor* sp.nov.) parassiti di mammiferi africani.” Serie 8, 22 (1), 57-64.
- b. LEROUX, P. L. & BIOCCA, E., 1957.—“Su una nuova specie del genere *Uncinaria* e su due nuove specie del genere *Ancylostoma*.” Serie 8, 22 (2), 192-199.

(185a) *Angulocirrus* n.g. is created for two new species of nematodes from mammals. It resembles *Macielia* and *Delicata* but the right spicule is bent distally and its tip is hooked, the inner surface of the bursa is spinose and the female tail has a rounded end and terminal spine. In *A. orycteropi* n.sp., from two *Orycteropus afer* from Somalia which died at the zoo in Rome, the spicules are 0.200-0.240 mm. long, the bursa is 0.360-0.490 mm. wide and the oesophageal length is 0.428-0.480 mm. in the male and 0.505-0.570 mm. in the female. *A. minor* n.sp. from *Manis temminckii* from the Transvaal and Northern Rhodesia, has fewer longitudinal striations and larger and more numerous bursal spines than *A. orycteropi*. Its measurements are: spicules 0.135-0.145 mm., bursal width 0.240-0.270 mm., and oesophagus 0.280-0.298 mm. in the male and 0.364-0.440 mm. in the female.

M.MCK.

(185b) *Uncinaria parvibursata* n.sp. from the honey-badger *Mellivora ratel* from South Africa is apparently the first species of this genus to be reported in an African animal. It has a very small bursa, which is 0.5-0.6 mm. wide when open, and the antero-lateral ray is exceptionally small in relation to the other two laterals. The distance between the terminals of the antero-lateral and medio-lateral rays is more than three times the distance between the terminals of the medio-lateral and postero-lateral rays, a ratio greater than in any other *Uncinaria*. The new species resembles most closely *U. criniformis* and *U. thapari* but the eggs are only 0.050-0.061 mm. × 0.030-0.035 mm. in size. A single male of *Ancylostoma iperodontatum* n.sp. from the hunting leopard *Acinonyx jubatus* from Northern Rhodesia shows similarity only to *A. martinagliai* but has three pairs of dorsal teeth in the buccal capsule, the spicules are much smaller (1.15 mm. long) and the caudal bursa is clearly different. The distal half of the antero-lateral ray diverges from that of the medio-lateral less than in other species of the genus. *A. buckleyi* n.sp. was found in a puma *Felis concolor* from Argentina which died at the London Zoo. It is most nearly related to *A. caninum* and can be differentiated from it by the presence of a second pair of small dorsal teeth as in *A. martinagliai*.

M.MCK.

186—Australian Journal of Biological Sciences.

- a. SYMONS, L. E. A., 1957.—“Pathology of infestation of the rat with *Nippostrongylus muris* (Yokogawa). I. Changes in the water content, dry weight, and tissues of the small intestine.” 10 (3), 374-383.
- b. POLLAK, J. K., 1957.—“The metabolism of *Ascaris lumbricoides* ovaries. III. The synthesis of alanine from pyruvate and ammonia.” 10 (4), 465-474.

(186a) During the fifteen days following experimental infection with *Nippostrongylus muris* the tangential diameter of the jejunum of rats increased twofold. The thickness of the

circular layer of the muscularis externa was doubled by hypertrophy and that of the longitudinal layer increased by half. In light infections the parasites grouped themselves in reddened and thickened pockets which bulged on the serous surface. R.T.L.

(186b) In dialysed homogenates of ovaries of *Ascaris lumbricoides* the synthesis of alanine from added sodium pyruvate and ammonium chloride, together with the necessary co-factors, was observed under anaerobic conditions at 37°C. The synthesis was increased three-fold by the addition of chloramphenicol. In the presence of chloramphenicol and phosphate buffer the optimum pH for this reaction was 7.2, but in the absence of chloramphenicol the pH optima were 6.9 and 8.2. The alanine formation was increased a little by the addition of ascorbic acid or of large quantities of lithium lactate. Ovarian homogenates from *Ascaris* which had been kept for three days in an inorganic non-nutrient medium produced greater amounts of alanine than those prepared from fresh worms. Pollak has found an active and non-specific alanine- α -keto acid transaminase in the ovary of *A. lumbricoides*. M.MCK.

187—Australian Veterinary Journal.

- a. PETERSON, J. E., 1957.—“Observations on parasitic gastro-enteritis of cattle in Western Australia.” **33** (5), 108–113.
- b. GEE, R. W. & AUTY, J. H., 1957.—“The heartworm *Dirofilaria immitis* in Victoria. An unusual cause of death in a dog.” **33** (6), 152–153.
- c. RIEK, R. F. & KEITH, R. K., 1957.—“Studies on anthelmintics for cattle: I. The efficiency of toluene with special reference to the hookworm *Bunostomum phlebotomum* (Railliet 1900).” **33** (7), 162–168.
- d. RIEK, R. F. & KEITH, R. K., 1957.—“Studies on anthelmintics for cattle: II. The efficiency of 1:8 dihydroxyanthraquinone.” **33** (7), 169–173.
- e. ROBERTS, F. H. S., 1957.—“The incidence and abundance of the gastro-intestinal helminths of cattle in the Tooradin district of south-eastern Victoria.” **33** (7), 174–177.
- f. DREZANCIC, I. I., 1957.—“Papain as an anthelmintic for *Haemonchus contortus* in sheep.” **33** (7), 178–181.
- g. GEMMELL, M. A., 1957.—“Hydatid disease in Australia. II. Observations on the geographical distribution of *Echinococcus granulosus* (Batsch, 1786) (Rudolphi, 1805) in the dog in New South Wales.” **33** (9), 217–226.
- h. FORSYTH, B. A., 1957.—“The occurrence of *Oesophagostomum venulosum* in cattle in Australia.” [Correspondence.] **33** (9), 247–248.

(187a) Peterson reports on a survey of gastro-intestinal nematodes in dairy cattle in the Busselton district of Western Australia. *Cooperia oncophora* and *Ostertagia ostertagi* were the most prevalent and the commonest causes of outbreaks of parasitic gastro-enteritis. The highest counts of adult worms in a yearling beast were 81,000 *O. ostertagi* and 2,400 *C. oncophora* and in a calf 44,000 *O. ostertagi* and 40,000 *C. oncophora*. *Oesophagostomum venulosum* was found in cattle in Australia for the first time. *Trichostrongylus axei*, *T. longispicularis*, *Cooperia punctata*, *Nematodirus filicollis*, *O. radiatum* and *Strongyloides papillosus* were also frequently present. S.W.

(187b) The occurrence is reported of *Dirofilaria immitis* in a dog bred in Shepparton, Victoria, under climatic conditions which have been regarded hitherto as unsuitable for its transmission. R.T.L.

(187c) Riek & Keith have found commercial grade toluene to be effective against *Bunostomum phlebotomum*, *Haemonchus placei* and *Cooperia* spp. in cattle and to be safe in the doses administered. There are indications that it also has some effect against *Ostertagia ostertagi* and *Trichostrongylus axei* but it is ineffective against *Oesophagostomum radiatum*. The recommended dosage is 10 ml. per 100 lb. body-weight given as an emulsion or suspension. When mixed with liquid paraffin it loses its efficacy. Animals must be starved overnight and dosing preceded by sodium bicarbonate to close the oesophageal groove. Side effects observed were some inappetence and a slight temporary anaesthetic effect. S.W.

(187d) Continuing their work on anthelmintics for cattle, Riek & Keith have tested 1:8 dihydroxyanthraquinone. Doses of 2 gm. and 2.5 gm. per 100 lb. body-weight did

not appear to be toxic and were effective against adult *Oesophagostomum radiatum*, *Haemonchus placei* and *Cooperia* spp.; immature stages, *Bunostomum phlebotomum* and *Moniezia* spp. were not affected. Dose rates of 4 gm. to 5 gm. per 100 lb. caused severe purging and inappetence. Premedication with sodium bicarbonate is unnecessary; although starvation did not usually increase the efficacy, some decrease in efficiency was observed in calves which had received a high protein supplement and milk immediately before dosing. S.W.

(187e) Roberts has studied, by means of faecal egg counts and larval differentiation from faecal cultures at fortnightly intervals, the incidence and abundance of gastro-intestinal helminths of cattle in the Tooradin district. The period of observation was from October, 1952 until September, 1954 for the first group of calves and from September, 1954 to January, 1956 for the second group. The mean monthly rainfall and maximum and minimum temperatures are given. *Cooperia oncophora*, *Ostertagia* spp. and *Trichostrongylus* spp. were the most prevalent with peaks of infestation in the cooler months; *Ostertagia* also showed a subsidiary peak in the summer. *Haemonchus placei*, *C. punctata*, *Oesophagostomum radiatum* and *Moniezia benedeni* occurred in small numbers in all, or almost all, the calves. The incidence of *Nematodirus* was surprisingly low, it and *Bunostomum phlebotomum* being found in only a few animals. S.W.

(187f) Drezancic has tested papain, in the form of Nematolyt, against experimental infections of *Haemonchus contortus* in sheep. In ten of the 16 sheep treated all the *H. contortus* were destroyed; in four there was a great reduction and in two a considerable reduction in faecal egg counts. It was also found that 90% of the eggs were digested by Nematolyt in a short time. Doses of 10 gm. in 60-100 ml. of water and of 5 gm. in 50-80 ml. of water were used. Pregnant ewes, and young, sick and weak animals can be safely treated as papain is neither toxic nor absorbed from the intestine. Premedication with sodium bicarbonate is unnecessary. S.W.

(187g) Gemmell has made an extensive investigation of the incidence of *Echinococcus granulosus* in dogs in the different divisions of New South Wales and illustrates his report with two maps and nine tables. Over-all the incidence was 5% in city and country town dogs, 21.3% in dogs used in abattoirs, 17% in sheep-dogs and 15% in rabbit-dogs. In the first two groups there was no correlation between incidence and geographical distribution but there was a direct relationship in the sheep-dog and rabbit-dog groups. There was a decrease in the incidence in sheep-dogs to the north and west of the Southern Tablelands. Half the properties examined had one or more infested dogs; the proportion harbouring one infected dog was similar in each division, harbouring two or three was greater in the Southern Tablelands and harbouring four or more was greater in the South Western Slopes. There was no significant difference in the incidence of *Taenia hydatigena* in the different divisions and this indicates that variations in methods of animal husbandry are not responsible for the differences in incidence of *E. granulosus*. S.W.

(187h) Forsyth now records the presence of *Oesophagostomum venulosum* in cattle in Victoria for the first time, this parasite having previously been identified erroneously as *O. radiatum*. R.T.L.

188—Berliner und Münchener Tierärztliche Wochenschrift.

- a. SCHMIDT-HOENSDORF, F. & SAAR, C., 1957.—“Katzenegel (*Opisthorchis felineus*) in der Umgegend Berlins.” 70 (20), 432-433. [English summary p. 433.]

(188a) *Opisthorchis felineus*, hitherto known in Germany only in the maritime provinces, was found in the bile-ducts of two foxes from the neighbourhood of Spandau. R.T.L.

189—Biochemical Journal.

- a. GREEN, N. M., 1957.—“Protease inhibitors from *Ascaris lumbricoides*.” 66 (3), 416-419.

(189a) Green has demonstrated the presence, in extracts of *Ascaris* body-wall, of an

inhibitor of chymotrypsin which is the first of its type to be described. It differs from the trypsin inhibitor which is also present in *Ascaris* body-wall by being inactivated by hot trichloroacetic acid. Both the chymotrypsin and trypsin inhibit esterase and proteinase activity stoicheiometrically but were without effect on the activity of horse-liver esterase. S.W.

190—Boletín Chileno de Parasitología.

- a. LA FUENTE B., H. DE, 1957.—“Ascaridiasis de las vías biliares.” 12 (2), 32–34. [English summary p. 32.]

191—Bollettino della Società Italiana di Biologia Sperimentale.

- a. DEIANA, S., 1957.—“Sulla sede di produzione e sulla funzione della sostanza ad attività ialuronidasi dello *Strongylus equinus* e dello *Strongylus edentatus*.” 33 (1/2), 104–106.

(191a) The substance exhibiting hyaluronidase activity which was previously observed in total extracts of *Strongylus equinus* and *S. edentatus* [for abstract see Helm. Abs., 24, No. 512a] was found, by studying extracts from the peri-enteric fluid and different organs of these worms, to be located in the oesophagus. M.MCK.

192—Bombay Veterinary College Magazine.

- a. KALAPESI, R. M. & PUROHIT, B. L., 1957.—“Histo-pathological observations of some lesions due to schistosome infection in an Indian elephant.” 6, 8–11.
b. RAO, S. R., BHATAVDEKAR, M. Y. & DETHA, K. T., 1957.—“Morphology and development of *Coenurus gaigeri* Hall in a ewe with particular reference to the taxonomy of the genus *Multiceps*.” 6, 12–18.

(192a) In preserved tissue from an Indian elephant from the Victoria Zoological Gardens in Bombay, Kalapesi & Purohit found schistosome eggs, of elongate and conical shape with a short terminal spine, in the liver and mesenteric lymph nodes. Pseudotubercles were present in the liver. Smooth hard spherical bodies were found in the mesentery, ranging in size from microscopic to that of “large playing marbles”, two of which contained degenerating eggs. No schistosome eggs were observed in the faeces of the elephant but a section of mesenteric vein revealed an adult with a non-tuberculate cuticle. One intestinal nodule contained a few *Parabronimus indicus* [*?Parabronema indicum*]. M.MCK.

(192b) A *Coenurus gaigeri* measuring 230 mm. × 160 mm. from a ewe in Amreli, India, contained numerous cysts and scolices, and bore scolices on the outside as well. Apparently the scolices floating inside arose from the cyst wall and developed into bladders. These bladders gradually enlarge and produce scolices on the outside and inside like the parent cyst. The guard of the small hooks on the scolex was not bifid as supposed by Gaiger and by Dey but showed only a slight depression which sometimes may be mistaken for the bifid condition. The distinguishing characters of the larval stages of *Multiceps multiceps*, *M. serialis* and *M. gaigeri* are tabulated. The cysts recorded as *Echinococcus* by Thapar in 1937 are thought to have been coenuri. M.MCK.

193—British Journal of Ophthalmology.

- a. GILKES, M., 1957.—“Leech-bite of the cornea.” 41 (2), 124–125.
b. BUDDEN, F. H., 1957.—“Natural history of onchocerciasis.” 41 (4), 214–227.

(193b) Budden relates the changes in visual acuity and ocular signs, in a village community in Nigeria in which severe onchocerciasis is endemic, to the age of the patient and to the intensity and distribution of the microfilariae in the body. In the present state of knowledge it is considered advisable to limit treatment to the younger patients as reaction to the destruction of microfilariae is least severe and prevention most likely to be effective. R.T.L.

194—British Journal of Pharmacology and Chemotherapy.

- a. BUEDING, E. & MANSOUR, J. M., 1957.—“The relationship between inhibition of phosphofructokinase activity and the mode of action of trivalent organic antimonials on *Schistosoma mansoni*.” **12** (2), 159–165.

(194a) Bueding & Mansour have demonstrated, by a series of detailed physiological investigations, that trivalent organic antimonials inhibit the activity of phosphofructokinase in *Schistosoma mansoni* and, consequently, slow down the rate of glycolysis. The schistosome phosphofructokinase is more sensitive to antimonials than is the mammalian one. While this inhibition of phosphofructokinase activity in schistosomes can account for the chemotherapeutic activity of trivalent organic antimonials, their toxicity to the host cannot be ascribed to it. Their observations are recorded in detail and the significance of them is discussed. S.W.

195—British Medical Journal.

- a. ARSENI, C. & SAMITCA, D. C., 1957.—“Cysticercosis of the brain.” Year 1957, **2** (5043), 494–497.
 b. MACARTHUR, W. P., 1957.—“Cerebral cysticercosis.” [Correspondence.] Year 1957, **2** (5046), 714.

(195a) Between 1935 and 1955, sixty-five cases of cerebral cysticerciasis were seen at the Postgraduate Institute of Medicine, Bucharest. The patients came from all over Rumania. The cysts were limited to the brain in 90%. In 26, epileptic seizures were the first symptom. In 56, marked intracranial hypertension gave rise to headache, vomiting, vertigo and changes in the optic discs and in eight it was accompanied by mental disturbances. A single instance of aseptic suppuration developed in one patient who had a hydrocephalic skull. The blood showed an eosinophil count of over 3% in 19 and over 6% in 13, including one with 16% and one with 20%. A symmetrical internal hydrocephalus was revealed by ventriculography in 32 out of 35 examined. 48 operations were performed, viz., large decompressive craniotomies in 20, decompression by Cushing's technique in seven and exploration of the posterior fossa in 21. Cerebral oedema was treated by massive dehydration and daily lumbar puncture. Eleven out of 48 patients died during, or shortly after, operation. R.T.L.

(195b) MacArthur recalls that he reported cases of cysticerciasis in the Report on the Health of the Army for 1930 and in *Trans. roy. Soc. trop. Med. Hyg.* in 1934 and that in *British Encyclopaedia of Medical Practice* (1950) he stressed the unreliability of the case histories given by victims of cerebral cysticerciasis. R.T.L.

196—British Veterinary Journal.

- a. DUNN, D. R. & WHITE, E. G., 1957.—“Studies on the pig lungworm (*Metastrongylus* spp.). III. Experimental infection of guinea pigs.” **113** (8), 308–315.
 b. SOULSBY, E. J. L., 1957.—“Intradermal tests on pigs with antigens prepared from *Trichinella spiralis* and *Ascaris lumbricoides*.” **113** (11), 447–449.
 c. BYWATER, H. E., 1957.—“Nematodiriasis.” **113** (11), 450–453.

(196a) Dunn & White give a detailed account of the symptoms, haematology and histopathology in guinea-pigs experimentally infected with *Metastrongylus apri* by feeding them on *Eisenia foetida* (cultured in compost to which had been added a suspension of embryonated eggs from worms obtained from lungs from a bacon factory). The mature worms found in the guinea-pigs rarely exceeded 20 as compared with 30 to 60 immature forms and were never more than half to two-thirds the length normally attained in the lungs of swine. Hypertrophy of the bronchial and bronchiolar muscles was rare and lymphoid hyperplasia was absent while other lesions resembled those produced in swine. Most of the lungworms were expelled by coughing before they had reached sexual maturity. R.T.L.

(196b) Skin tests were simultaneously made with *Trichinella spiralis* antigen and *Ascaris lumbricoides* antigen on 109 bacon-weight pigs which, when slaughtered twenty-four hours later, were found to be free from trichina infection. Only six of the pigs gave any positive reaction to the trichina antigen but these gave a marked reaction to the ascaris antigen. Twenty-nine of the pigs proved to have a *Trichuris suis* infection, but only one of them had reacted to the trichina antigen. It is therefore deduced that the presence of the whipworms did not sensitize the pigs to the trichina antigen, but some degree of sensitivity to the trichina antigen had been conferred by the marked ascaris sensitivity. R.T.L.

(196c) It is estimated that, in 1951, nematodiriasis caused a 10% to 12% mortality in lambs in affected flocks in the North of England and the adjacent counties of Scotland. Since then there have been many outbreaks where ley farming has resulted in overstocking. The eggs of *Nematodirus* spp. resist desiccation but warmth, humidity and prolonged light rain or short heavy rainfalls greatly increase the infestations on the pastures. A three-year ley appears to be the most dangerous pasture although permanent pastures can be highly infective. When faecal egg counts reach 50 per 200 gm. of faeces ewes and hoggets scour in winter and autumn, 200 eggs per 500 gm. of faeces in lambs is accompanied by scouring in spring and early summer, while 800 eggs per 1,200 gm. of faeces in the early part of the season generally indicates a lethal infection. Phenothiazine, piperazine salts and hexachlorethane proved valueless in the field, but an emulsion of purified chlorinated aliphatic hydrocarbons with trace elements (Nemadis) has shown some promise in trials on 620 lambs. R.T.L.

197—Bulletin of Endemic Diseases. Baghdad.

- a. WATSON, J. M., 1957.—“Effect of human pollution on density of populations of *Bulinus truncatus*.” Year 1956–57, 2 (1/2), 19–29.
- b. WAJDI, N. A., 1957.—“Aquatic plants harbouring the snail-vector of Bilharzia in Iraq.” Year 1956–57, 2 (1/2), 30–40.

(197a) A systematic survey of a large drain running through the village of Tel Mohammed near Baghdad, during the season of maximal mollusc population, showed that the number of *Bulinus truncatus* was highest in the stretch within the village and diminished rapidly beyond its limits. While there was a very close correlation between the numbers of snails and the opportunities for human pollution of the water, the exact mechanism whereby human pollution favours the development of large populations of schistosome-transmitting snails and particularly of *B. truncatus* is still unknown. R.T.L.

(197b) Wajdi gives the scientific name, local name, distribution, a brief description of 15 aquatic plants (of which 8 are illustrated) and the relation of each to the molluscan fauna, in Iraq. R.T.L.

198—Bulletin of Marine Science of the Gulf and Caribbean.

- a. SPARKS, A. K., 1957.—“Some digenetic trematodes of marine fishes of the Bahama Islands.” 7 (3), 255–265.

(198a) Twenty-three species of digenetic trematodes are identified from 17 species of marine fish from the Bahamas. There are 17 new host records [16 are given in the author's abstract and 18 in a table]. *Helicometrina elongata* is reported for the first time from the Atlantic and the known length of *Ectenurus virgulus* is extended to 6.6 mm. to include a specimen found in *Holocentrus ascensionis*. Sparks tabulates the species common to Dry Tortugas (Florida) and Bahamas, and to Bermuda and Bahamas. The faunae of Bahamas and Dry Tortugas were much more alike than those of Bahamas and Bermuda or of Bermuda and Dry Tortugas. M.MCK.

199—Bulletins et Mémoires de la Société Médicale des Hôpitaux de Paris.

- a. BÉTHOUX, L. & MERLE, M., 1957.—“A propos d'un cas d'échinococcose alvéolaire du foie avec métastase pulmonaire probable.” 4e Série, 73 (3), 64–67.
- b. MICHON, P., HEULLY, F., DORNIER, R., LARCAN, A., HURIET, C. & PETERS, A., 1957.—“Distomatoses hépatiques à *Fasciola hepatica* contractées dans le nord-est de la France.” 4e Série, 73 (9/10), 215–220.

(199b) Michon *et al.* give the histories of two cases of *Fasciola hepatica* in man, contracted in the north-eastern part of France. They discuss the clinical and biological signs and reaffirm the efficacy of treatment with emetine at the rate of 1 cg. per 10 kg. body-weight for ten to twelve days.

S.W.

200—Bulletin of the National Society of India for Malaria and Other Mosquito-Borne Diseases.

- a. SINGH, J. & RAGHAVAN, N. G. S., 1957.—“Diethylcarbamazine. A review.” 5 (1), 35–69.
- b. SINGH, D. & RAGHAVAN, N. G. S., 1957.—“A-typical form of microfilaria of *W. bancrofti*.” 5 (1), 79–80.
- c. BHATIA, M. L., 1957.—“Cestode infection in Cyclops in Rajasthan.” 5 (1), 80–81.

(200b) Two out of 6,417 blood films from Chattarpur (an area in Madhya Pradesh where *Wuchereria bancrofti* is endemic) contained 212 sheathed microfilariae averaging $209.08 \mu \times 6.72 \mu$, i.e. significantly shorter than those of *Mf. bancrofti*. The tail end tapered uniformly to a blunt tip and was devoid of nuclei. It is recalled that a similar form recorded from a human blood smear from Madagascar was named *Mf. bancrofti* var. *vauceli* Galliard & Brygø, 1955.

R.T.L.

(200c) Coracidia were found in specimens of *Cyclops* collected from a step well at the village of Barapel, east of Udaipur in Rajasthan.

R.T.L.

201—Bulletin of the Research Council of Israel.

- a. WITENBERG, G. & SALITERNIK, Z., 1957.—“Studies on vectors of *Schistosoma* in Israel.” 6B (1/2), 107–142.

(201a) This is a thorough assessment of the distribution and importance of the schistosome vectors in Israel, viz., *Bulinus truncatus* for *Schistosoma haematobium* and *Biomphalaria alexandrina* for *S. mansoni*. Although 12,000 Israeli immigrants, mainly from the Yemen, are shedding schistosome eggs which are chiefly of *S. mansoni* the vector is restricted to part of the Yarkon river which is not used for bathing and the disease has no prospect of spreading. *Bulinus* is wide-spread. Its biology and oecology in Israel are described in detail. It is a poor vector of the local strains of *S. haematobium*: in laboratory experiments it was refractory to strains from Morocco and the Yemen; about 4% were infected by the Iraqi strain and about 30% by the Egyptian strain. The Egyptian strain, however, often killed the snails. Human carriers of urinary schistosomiasis are rare but spread of the disease is possible and precautions are advisable. *S. bovis* and *Paramphistomum* sp. have been recorded from Israel and are able to develop in the local strain of *Bulinus*.

M.MCK.

202—Bulletin de la Société de Pathologie Exotique.

- a. DESCHIENS, R., 1957.—“Présentation d'une technique de réaction de fixation du complément avec les antigènes parasitaires de l'Institut Pasteur.” 50 (3), 364, 365–368.
- b. LAGRAULET, J., LE BRETON, G. & RIT, 1957.—“Lésions histologiques du segment postérieur dans un cas d'onchocercose oculaire.” 50 (3), 364, 369–372.
- c. CAVIER, R. & DEBELMAS, A. M., 1957.—“Contribution à l'étude des propriétés anthelminthiques de quelques antibiotiques et de leurs associations.” 50 (3), 402–407.
- d. BIGUET, J., DEBLOCK, S., LEDOUX, G. & CAPRON, A., 1957.—“Le parasitisme intestinal en milieu psychiatrique dans la région du Nord de la France. I. L'oxyurose chez un millier d'aliénés adultes. Influence exclusive des facteurs éthologiques sur la fréquence et le degré de l'infestation aux divers âges de la vie.” 50 (3), 411–417.

- e. LANGUILLON, J., 1957.—"Carte des filaires du Cameroun." 50 (3), 417-427.
- f. HARANT, H., CASTEL, P. & GRAS, G., 1957.—"Élimination d'*Hymenolepis fraterna* de la souris et du rat par le dilaurate et le dichlorure d'étain di-*n*-octyle." 50 (3), 427-433.
- g. DOBY, J. M., BONVARLET, J. & DOBY-DUBOIS, M., 1957.—"L'oxyurose infantile chez les populations de la région de Yaoundé (Cameroun). Résultats de 3,000 examens par la technique de Graham." 50 (3), 433-446.
- h. BUTTNER, A. & BOURCART, N., 1957.—"Étude des facteurs épidémiologiques qui président à la création d'un foyer de bilharziose humaine. Observations faites au Brésil et en Corse." 50 (3), 473-480.
- i. PAYET, M., LINHARD, J., PENE, P. & ARMENGAUD, M., 1957.—"Considérations étiologiques et hématologiques à propos de 152 cas d'anémies en milieu africain à Dakar." 50 (3), 486-496.
- j. LARRIEU, M., 1957.—"Mortalité et morbidité dues à l'ankylostomose dans trois agglomérations urbaines du cercle de Séguéla." 50 (3), 500.

(202a) After a brief introduction Deschiens gives, in tabular form, the results obtained in complement fixation tests with parasitic antigens, using firstly the Calmette-Massol and secondly the Pasteur Institute technique. The latter is a modification of that of the Kolmer-Debains test and is more sensitive. Notes on the procedure and results in each case accompany the tables. s.w.

(202b) Lagraulet *et al.* have studied the histology of the lesions of the posterior segment of the eye in a case of ocular onchocerciasis. From their sections and those from another eye which they have been able to examine they conclude that the lesions appear irrespective of the presence of microfilariae in the eye. They are therefore probably caused by toxins diffusing from dead microfilariae and adults and affecting the nerve cells of the retina and optic nerve; this theory is supported by the fact that treatment with notezine causes exacerbation of the symptoms of ocular inflammation. s.w.

(202c) Using as test organism *Rhabditis macrocerca* in coproculture, Cavier & Debelmas have tested the anthelmintic properties of a number of antibiotics. Bacitracin had a marked activity but the hydrochlorides of the tetracyclins showed the greatest efficacy. The authors discuss the synergic and antagonistic effects which operate in combinations of antibiotics. s.w.

(202e) In this survey of filariasis in man in the French Cameroons, Languillon maps the distribution in the various regions and gives tables showing the incidence by sex and age in different districts. A total of 13,772 examinations was made. *Acanthocheilonema perstans* and *Loa loa* were found between the second and seventh parallels and occurred in 78% and 24% of those examined respectively. *Wuchereria bancrofti* was present in two foci; in the first and larger, lying between the ninth and thirteenth parallels, the incidence was 18%; a second and smaller focus was found in the fisheries of Douala. *Onchocerca volvulus* was wide-spread throughout the territory and cysts were observed in 19.6%. *Dipetalonema streptocerca* was found only in the forest regions and had an incidence of 8.7% although Charles has found that around the Nyong and Sanaga rivers the incidence is 15.5%. s.w.

(202f) Harant *et al.* have tested the dilaurate and dichloride of tin di-*n*-octyl against *Hymenolepis fraterna* in rats and mice. The former showed very little activity. The dichloride was more effective, particularly when given for several consecutive days, and doses of 150 mg. per kg. body-weight for three days eliminated all the cestodes from ten rats so treated. The therapeutic dose is about one quarter of the toxic dose in mice but this has not yet been confirmed for other domestic animals. s.w.

(202g) Doby *et al.* present the results of their extensive survey of enterobiasis in children in the Yaoundé region of the French Cameroons. Five tables show the incidence by age, race and sex. The incidence in white children was about 70% throughout the school years; boys were more frequently parasitized than girls, 73.14% and 64% respectively being infected. In native children *Enterobius* was not present in those less than one month old; it then

appeared suddenly and the incidence remained at about 15% up to three years of age when it increased to 45%, remaining constant at this figure during the school period. Hausas were strikingly more heavily infected than other autochthonous races and this is believed to be correlated with their way of life and mode of dress. S.W.

(202h) Buttner & Bourcart discuss, with particular reference to Brazil and Corsica, the epidemiological factors which govern the formation of foci of human schistosomiasis. The main factor is the frequency of contact between the vertebrate host and susceptible molluscs. The focus which was discovered at Fordlândia in 1949 constitutes the introduction of schistosomiasis into the Amazon basin. As the land most promising for cultivation is that which provides suitable habitats for *Australorbis* the potential danger of the infection spreading is considerable. In Corsica the potential vector of *Schistosoma haematobium* is limited to the coastal region and unless troops or other persons from endemic areas are stationed there for some length of time the risk is slight. It is of interest to note that the focus of *S. bovis* discovered by Brumpt in 1949 was still very active in 1956. Once established eradication is difficult. S.W.

(202i) Amongst the 152 patients with anaemia studied by Payet and his co-workers in Dakar, 26 suffered from ancylostomiasis. In 20 of these the number of red blood cells was below 2,500,000 and the haemoglobin was very much lower than the normal quantity. S.W.

(202j) Larrieu reports that ancylostomiasis is common in the north of the Ivory Coast and in some areas is the most serious parasitic disease. Treatment with tetrachlorethylene, accompanied with iron, is the remedy of choice. S.W.

203—Bulletin. Tobacco Research Board of Rhodesia and Nyasaland.

- a. DAULTON, R. A. C., 1957.—“Factors in the production of healthy tobacco seedlings. Soil treatment for weed and eelworm control.” No. 6, pp. 15–19.

(203a) Methods of controlling eelworms in tobacco seedling beds by steaming and chemical fumigation are described. Instructions for the application of D-D mixture, ethylene dibromide and methyl bromide are given. H.R.W.

204—California Agriculture.

- a. HANSEN, C. J., LOWNSEBURY, B. F. & HESSE, C. O., 1957.—“Nematode resistance in plums.” 11 (10), 9, 13.

(204a) In tests on the resistance of rooted cuttings of Marianna strains 2623 and 2624 and the Myrobalan strains 29c, 29d, 29g and 29 (Sonoma) to *Meloidogyne incognita* var. *acrita* and *M. javanica*, these plum rootstocks were apparently immune or highly resistant. Lovell peach seedlings were severely infected but the peach seedlings, Shalil and S-37, made better growth although there was a considerable number of galls on the roots. R.T.L.

205—Canadian Journal of Biochemistry and Physiology.

- a. PASSEY, R. F. & FAIRBAIRN, D., 1957.—“The conversion of fat to carbohydrate during embryonation of *Ascaris* eggs.” 35 (7), 511–525.

(205a) Passey & Fairbairn examined the change in the lipids, glycogen and trehalose in the eggs of *Ascaris lumbricoides* incubated at 30°C. For the first 10 days while the eggs developed to the vermiform stage, lipids and carbohydrates decreased. During the next 15 days, in which larvae became infective, lipids continued to decrease, but at a greater rate, whereas carbohydrate was completely resynthesized. An extensive investigation of all the major components in the eggs as a possible source of carbohydrate revealed that lipid-carbohydrate conversion had occurred. W.P.R.

206—Canadian Journal of Botany.

- a. WINSLOW, R. D. & LUDWIG, R. A., 1957.—“Studies on hatching stimulation in the beet nematode, *Heterodera schachtii* Schmidt.” **35** (5), 619–634.

(206a) Hatching of the beet nematode from Ontario beet fields was stimulated by hatching factors in host plant leachates. Sugar-beets growing under glass in autumn produced more active leachates under “short” day (8–10 hours daylight) and moderate temperatures (60–70 F.) than under “long” day (similar daylight extended to 14–16 hours by incandescent light) and more extreme temperatures (50 F. and 80°F.). When germinating rape seedlings or the roots of older beet or rape plants were immersed in water, the factor was liberated into the water continuously but progressively more slowly. Increasing the concentration of rape seedlings in water increased correspondingly the potency of the resulting leachate, the maximum concentration yielding fluid stimulatory at a concentration 1×10^{-6} . Tops, roots and various portions of the roots of young rape seedlings produced stimulatory leachates. Beet root leachate was concentrated 20 to 40-fold without appreciable loss of activity; on further concentration active material was precipitated. Attempts to extract the factor from beet or rape root leachate with charcoal, phenol, 1-butanol and ion exchange are described. R.D.W.

207—Canadian Journal of Comparative Medicine and Veterinary Science.

- a. GIBBS, H. C., 1957.—“On the role of rodents in the epidemiology of hydatid disease in the Mackenzie River basin.” **21** (8), 287–289. [French summary p. 289.]
 b. GRAESSER, F. E., 1957.—“Lungworm disease of cattle in Alberta.” **21** (10), 355–358. [French summary p. 358.]
 c. MCGREGOR, J. K. & KINGSCOTE, A. A., 1957.—“A survey of gastro-intestinal helminths of cattle in Ontario.” **21** (11), 370–373. [French summary p. 373.]

(207a) Gibbs failed to produce hydatid lesions in seven *Clethrionomys gapperi*, 19 *Microtus pennsylvanicus* and 18 *Peromyscus leucopus* (all born and raised in captivity) by feeding them with gravid segments of *Echinococcus granulosus*. A search for evidence of natural infection of these rodents in the field was also negative. R.T.L.

(207b) Since 1952, cases of *Dictyocaulus viviparus* have been detected in widely separated parts of Alberta. An account of a severe outbreak in cattle in the Edmonton district is now reported. R.T.L.

(207c) The incidence of gastro-intestinal helminths in cattle from farms throughout Ontario is tabulated. The specific identification of the parasites was not attempted. R.T.L.

208—Canadian Journal of Zoology.

- a. KHAN, M. A., 1957.—“*Sphaerularia bombi* Duf. (Nematoda: Allantonematidae) infesting bumblebees and *Sphaerularia hastata* sp.nov. infesting bark beetles in Canada.” **35** (4), 519–523.
 b. CONNELL, R. & CORNER, A. H., 1957.—“*Polymorphus paradoxus* sp.nov. (Acanthocephala) parasitizing beavers and muskrats in Alberta, Canada.” **35** (4), 525–533.
 c. SANWAL, K. C., 1957.—“Chambersiellidae n.fam. (Nematoda) with emended diagnosis of the genus *Chambersiella* Cobb, 1920, description of *C. bakeri* n.sp., and discussion of taxonomic position.” **35** (5), 615–621.
 d. LUBINSKY, G., 1957.—“List of helminths from Alberta rodents.” **35** (5), 623–627.

(208a) *Sphaerularia bombi* not hitherto known in Canada has been identified in queen bees of *Bombus terricola* and *B. ternarius* at Saskatoon, Saskatchewan. *S. hastata* n.sp. has been found in the mountain pine beetle *Dendroctonus monticolae*, the Douglas fir beetle *D. pseudotsugae* and the cocoon of the hymenopterous parasite *Coeloides dendroctoni* in British Columbia. In this new species the female has a smaller evaginated uterus of a smoother appearance and the male has a caudal bursa and a wider tail, than in *S. bombi*. It differs also from *S. dendroctoni* for the knobs of the spear are asymmetrically arranged in both sexes, the stylet in the female is wider, the male has subterminal caudal papillae and there are six lines in the lateral fields. R.T.L.

(208b) The beaver (*Castor canadensis*) and the musk-rat (*Ondatra zibethica*) in the Elk Island National Park, Alberta, were heavily parasitized by *Polymorphus paradoxus* n.sp. which is described and figured [but not differentiated from other species of the genus]. Immature specimens but no adults of the same species were also found in coots (*Fulica americana*). 28 out of 62 specimens of an amphipod [not identified] from a lake in the National Park were heavily infected with larval acanthocephalans. The relationship of these larvae to *P. paradoxus* was not investigated. Light infections of *P. marilis* were found in the lesser scaup, *Nyroca affinis*.
R.T.L.

(208c) The rhabditoid genus *Chambersiella* Cobb, 1920 is removed from Cephalobidae to a new family Chambersiellidae, as the arrangements of the most anterior rhabdions of the stoma are distinct from the others, the amphids open behind the broad anterior chamber of the stoma and, in some species, there are two ovaries. *Chambersiella bakeri* n.sp. from the bark of an oak in Ontario differs from *C. rodens* as the body is double its length, the buccal hooks are relatively small, protruding only slightly beyond the head, while there are two reflexed ovaries, and the vulva is circular and almost equatorial. The definition of *Chambersiella* is emended.
R.T.L.

(208d) There were 30 species of helminths, viz., 18 Cestoda and 12 Nematoda in a collection made from 16 species of rodents in 54 localities throughout Alberta. The host and locality are listed under each parasite. The parasites are also listed separately under each host. *Peromyscus maniculatus* is a new host record for *Capillaria hepatica*.
R.T.L.

209—Central African Journal of Medicine.

- a. ALVES, W., 1957.—"Bilharziasis in Africa. A review." 3 (4), 123-127.

(209a) Alves briefly reviews the present distribution and incidence of schistosomiasis in man in each of the African countries and draws attention to the new danger introduced by irrigation schemes.
R.T.L.

210—Ceylon Veterinary Journal.

- a. MCGAUGHEY, C. A., 1957.—"Paraplegia in a dog. Dramatic recovery after treatment with piperazine citrate." 5 (3), 60-61.

(210a) A dog with rapidly deteriorating spinal myelitis recovered dramatically after a course of treatment with caricide extending over 24 days at the rate of 10 mg. per lb. body-weight twice daily. Although the paraplegia may have been caused by the larvae or toxins of *Spirocerca lupi* examination of the faeces proved negative.
R.T.L.

211—Chinese Medical Journal. Peking.

- a. SHAO, P. J., HSÜ, H. C. & MAO, S. P., 1957.—"Studies on the artificial infection of *Oncomelania* snails with miracidia of *Schistosoma japonicum*." 75 (3), 189-211.
- b. CHENG, N. K. & CH'EN, P. C., 1957.—"Pyloric obstruction and sigmoidal fistula due to schistosomiasis. Report of two cases." 75 (4), 324-327.
- c. T'AO, S. C., 1957.—"Cardiac manifestations of the toxic action of potassium antimony tartrate in schistosomiasis patients. Paroxysmal ventricular tachycardia and fibrillation." 75 (5), 365-378.
- d. DAO, C., CH'I, W. L. & TS'AI, Y. H., 1957.—"Ventricular flutter and fibrillation producing Adams-Stokes syndrome following tartar emetic therapy in acute schistosomiasis japonica." 75 (5), 390-393.
- e. LIANG, S. F., WANG, H. C., WANG, T. H. & LIU, M. F., 1957.—"Parasitic invasion of the biliary tract. A report of 140 surgically treated cases." 75 (5), 418-420.
- f. HUANG, M. H., CHIANG, S. C., LU, C. W., YU, K. J., P'AN, J. P., P'AN, J. S. & KUO, P. F., 1957.—"Schistosomiasis dwarfism." 75 (6), 448-461.
- g. CHU, S. H., 1957.—"Chloroquine in the treatment of clonorchiasis: a report of 90 cases." 75 (6), 473-484.

- h. CHU, C. F., 1957.—“Schistosomiasis japonica of the colon complicated with carcinoma.” 75 (6), 500-508.
- i. CH'EN, M. C. & CH'EN WANG, S. C., 1957.—“Acute colonic obstruction in schistosomiasis japonica: a clinical study of 40 cases—14 associated with carcinoma.” 75 (7), 517-532.

(211a) The shortest time taken by miracidia of *Schistosoma japonicum* to develop to cercariae was 44 days and the longest time was 186 days. The higher the temperature, up to 32°-33°C., the more rapid the development. The longest period during which an infected snail continued to shed cercariae without being reinfected was 32 months. The death rate of infected snails was higher than that of uninfected snails especially in the hot weather. The males of *Oncomelania* were more susceptible than the females. Infection was not confined to young specimens. The susceptibility to infection of *Oncomelania* from different parts of China differed greatly. Those from remote areas, e.g. Fuch'ing, Yishan and an unnamed *hsien* in Szechuan were completely refractory. R.T.L.

(211e) Of 1,685 operations on the biliary tract in hospitals in Shanghai, 138 were necessitated by invasion by *Ascaris lumbricoides* and two by *Clonorchis sinensis*. R.T.L.

(211f) In three villages at Ch'ing P'u district in Kiangsu Province the schistosomiasis rate of infection was 90% of a total population of 623. There were 25 dwarfs all of whom suffered from schistosomiasis japonica, with hepatic cirrhosis, acquired through repeated exposure to infected water since early childhood. After appropriate antimonial therapy normal growth was resumed. Although the mechanism by which the dwarfism is produced is probably very intricate it can be ascribed to depression of the pituitary function by the toxic products of the parasites, the reflex mechanism from local lesions, metabolic disturbances induced by cirrhosis of the liver and gastro-intestinal dysfunction. R.T.L.

(211g) Of 90 cases of *Clonorchis sinensis* infection treated with chloroquine 76 were cured. The eggs showed morphological changes and the eosinophilia decreased markedly or returned to normal. Clinical symptoms were ameliorated or disappeared. The shortest period of treatment was 17 days with a total dosage of 6.8 gm. and the longest 130 days with a total dose of 52 gm. The long duration of treatment, the high cost of labour and materials nullify its usefulness. In an addendum it is stated that at autopsies made on cats which had received a fatal dose of chloroquine the worms were found to be still alive, and showed no change either in their morphology or in the number of eggs. R.T.L.

212—Clinica Veterinaria. Milan.

- a. SELLA, A., 1957.—“Considerazioni sull'uso protratto della fenotiazina nella terapia e nella profilassi della strongilosi in equidi sieroproductori.” 80 (2), 33-43. [English summary p. 43.]

(212a) Sella tabulates the strongyle egg counts of the faeces of horses and mules to show that repeated phenothiazine treatment brought about a lasting and marked decrease in the number of eggs. The author preferred the dosage rate of 40 gm. given every 40 days. Although the animals were undergoing unnatural treatment as they were being used for the production of serum the administration of phenothiazine caused no toxic effects. M.MCK.

213—Comptes Rendus des Séances de la Société de Biologie. Paris.

- a. CIACCIO, G., 1957.—“Essai de conservation d'une souche cobaye de type O de virus de la fièvre aphteuse sur sangsue (*Hirudo medicinalis*), hôte non habituel de ce virus.” 151 (2), 261-263.
- b. TIMON-DAVID, J., 1957.—“Nouvelles recherches expérimentales sur le cycle évolutif du trématode *Pseudhyptiasmus dollfusi* Timon-David (Digenea, Cyclocoelidae).” 151 (3), 592-594.

(213a) Ciaccio has demonstrated that a strain of foot-and-mouth disease adapted to the guinea-pig can be satisfactorily passaged through medicinal leeches and back into guinea-pigs. The virus can be kept in the leech for several days. S.W.

(213b) Timon-David has shown that, in the laboratory, *Leucochroa candidissima* can be infected with *Pseudhyptiasmus dollfusi* although less easily than *Helicella arenosa*, the natural

intermediary. *Turdus merula* has been found naturally infected with the adults and experimental infections have been established in *Corvus corone*, *Passer montanus* and pigeons. Chickens were refractory. Very young stages, not hitherto described, were found 11 days after infection of a crow and are briefly described. The effects on the host are discussed. S.W.

214—Cornell Veterinarian.

- a. BAKER, D. & GÜRALP, N., 1957.—“Lungworm disease in ponies. A case report of the respiratory worm parasitism in ponies and a donkey.” 47 (3), 456–464.

(214a) Baker & Güralp record the finding of *Dictyocaulus arnfieldi* in a pony which died of a debilitating disease. A second pony on the same farm was also infected. The animals had been bought from an adjacent pony-breeding establishment where a four-year-old Sicilian donkey was found to be passing 160 *D. arnfieldi* larvae per 100 gm. of faeces. This is the first report of the horse lungworm in New York State and probably in the U.S.A. Photomicrographs illustrate the morphology of the adults and larvae. S.W.

215—Deutsche Medizinische Wochenschrift.

- a. HÜBNER, O., 1957.—“Über Oxyurenggranulome in der Bauchhöhle.” 82 (18), 743–744.

(215a) Hübner describes two cases (one in a 13-year-old girl and one in a 43-year-old woman) in which tumours attached to the omentum were found to consist of numerous abscesses around structures presumed to be *Enterobius* ova. A footnote added while the paper was going through the press records a third case in a 13-year-old girl. A.E.F.

216—Deutsche Tierärztliche Wochenschrift.

- a. ENDREJAT, E. & BHATTACHARJEE, M., 1957.—“Behandlung der Askaridose von Büffel- und Rinderkalbern mit einem Piperazinpräparat (Garricide-Powder, Lederle).” 64 (17), 405.

(216a) Endrejat & Bhattacharjee have experimented with the piperazine preparation Garricide-Powder, Lederle, in the treatment of ascarid infection in calves and buffalo calves in Assam. After having tested various dosages they conclude that 12 mg. per kg. body-weight given on seven successive days is the most promising: all seven calves given this treatment were negative for ova when examined two to three times afterwards. A.E.F.

217—Dissertation Abstracts.

- a. BABERO, B. B., 1957.—“*Ascaris laevis* Leidy 1856, a nematode parasitic in some hibernating rodents.” 17 (5), 1157.

(217a) Infections with *Ascaris laevis* (of which *A. tarbangan* is considered a synonym) were experimentally established in eleven species of mammals [not named]. Tracheal migration accompanied by pathological lesions was observed, but in those which were unnatural hosts the worms were unable to establish themselves in the intestines and were either destroyed in the body or eliminated from the intestine. R.T.L.

218—Documenta de Medicina Geographica et Tropica. Amsterdam.

- a. DEINSE, A. B. VAN, 1957.—“The spread of echinococcosis.” 9 (2), 158–164.
- b. BRUIJNING, C. F. A., 1957.—“Notes on the common species of *Culicoides* (Diptera: Ceratopogonidae) from Surinam in relation to *ozzardi*-filariasis.” 9 (2), 169–172.
- c. BRUIJNING, C. F. A., 1957.—“Notes on *Lagochilascaris minor* Leiper, 1909.” 9 (2), 173–175.
- d. TARNAY, T. J., YARDLEY, J. M., GUICHERIT, I. D. & BROWN, H. W., 1957.—“Therapy of ascariasis with piperazine and purgative.” 9 (2), 176–180.

(218a) Van Deinse expands his theory, put forward in 1919, that the spread of echinococcosis to countries in Western Europe and the Mediterranean was largely from

Iceland by the dogs of whalers and other seafarers. He now adds piracy, trading and the carrying trade as contributory factors. R.T.L.

(218b) *Culicoides guttatus* is very common in the savannah area of Surinam, where *Microfilaria ozzardi* is endemic among the Amerindians. Filarial larvae were observed in the proboscis of two *C. guttatus* captured in the Amerindian village of Matta. R.T.L.

(218c) Bruijning summarizes previous records of the occurrence of *Lagochilascaris minor* in man and adds a further case from Surinam. He points out that the "*Felis nebulosa*" which Pawan stated was a natural host of *L. minor* in South America, was probably wrongly identified as this species occurs only in Asia. R.T.L.

(218d) A saline purge of Phospho-Soda had only slight effect on the efficacy of piperazine citrate in infections with *Ascaris lumbricoides* and complicated a mass treatment programme. R.T.L.

219—Dokladi Akademii Nauk SSSR.

- a. BOGDANOVA, E. A., 1957.—[On the biology of *Dactylogyrus skrjabini* Achmerov, 1954, a parasite of the fish, *Hypophthalmichthys molitrix* Val. from the Amur River.] 113 (6), 1391–1393. [In Russian.]

(219a) The speed of oviposition and the embryonic development of *Dactylogyrus skrjabini* kept in water, were studied. Eggs were laid at 14°–26°C. The greatest intensity, i.e. one worm laying one egg every 15 to 20 minutes, was obtained at 20°–24°C. and lasted up to three or four hours; the rate decreased subsequently. The eggs measured 55–80 μ by 47–55 μ . In the experiment, 57.1% to 66.7% of the eggs developed. At 20°–22°C. larvae were formed after three to four days, and at 16°–18°C. and above 24°C. after seven to eight days. Larvae, after leaving the eggs, could survive several days in the dark but were quickly killed by light. G.I.P.

220—Dokladi Vsesoyuznoi Ordена Lenina Akademii Selskokhozyaistvennikh Nauk Imeni V.I. Lenina.

- a. RJBALTOVSKI, O. V., 1957.—[Gastrothylax infestation in cattle.] 22 (1), 38–41. [In Russian.]

(220a) *Gastrothylax crumenifer* is reported for the first time in Russia. Numerous immature specimens were found once in cattle in the Moscow slaughterhouse. The only other species of Paramphistomata known from cattle in Russia are *Paramphistomum cervi* and *P. skrjabini*. A key and illustrations are given of the main differential characters of the six families of Paramphistomata occurring in ruminants. G.I.P.

221—Down to Earth. Midland, Michigan.

- a. WILSON, J. D., 1957.—"A distribution pattern of root-knot nematode infestation on muck-grown carrots." 13 (1), 4–7.

(221a) An estimate of the degree of root-knot infestation due to *Meloidogyne hapla* on 392 plots each 24 ft. \times 55 ft. was made by calculating the percentage of visibly deformed carrot roots. The estimates varied from 0–100% and wide variations were often found within short distances. On each plot onions, celery and potatoes were grown as well as the carrots. The yield of carrots was reduced by approximately 50% when the infestation increased from 5% to 93%. The reductions in yield of celery and onions were 20% and 23% respectively, while there was no appreciable reduction in the yield of potatoes. A study of the previous cropping of the plots showed that carrots following onions and fescue were comparatively lightly infested, but were heavily infested following parsnips, celery and potatoes. It is emphasized that variability in nematode infestation and previous cropping should be taken into account when plot experiments are being carried out and replication is therefore very desirable. M.T.F.

222—Economic Proceedings of the Royal Dublin Society.

- a. CARROLL, J., McKAY, J. & HANNIGAN, M., 1957.—“Propagation of eelworm-free stocks of strawberry runners.” 4 (3), 75–82.

(222a) By 1945 eelworm disease of strawberries due to *Aphelenchoides* spp. had become serious in the runner producing district of County Mayo. Since the warm-water treatments recommended (110°F. for 20 mins. or 115°F. for 5 mins.) did not give complete control, the authors investigated the effects of treatments on plants growing in 3 in. pots. Pots were immersed at five different temperatures from 116°F. to 124°F. for periods of 5 to 30 mins. All plants survived treatments at 116°F. for 30 mins., 118°F. for 25 mins., 120°F. for 20 mins. and 122°F. for 10 mins., although there was some check to growth. To reduce damage in another experiment the pots were inverted so that only the aerial parts were submerged. The plants withstood warm-water treatment best from mid-December until the end of January. The treated plants were examined for eelworms in March by inverting the pots in Baermann funnels and collecting any nematodes which emerged. Based on the experimental results, details are given of the procedure adopted for the propagation of eelworm-free runner plants. M.T.F.

223—Euphytica. Wageningen.

- a. DUNNETT, J. M., 1957.—“Variation in pathogenicity of the potato root eelworm (*Heterodera rostochiensis* Woll.), and its significance in potato breeding.” 6 (1), 77–89. [Dutch summary p. 88.]

(223a) A population of the potato-root eelworm, *Heterodera rostochiensis*, found at Duddingston in Scotland is able to increase on *Solanum* subspecies and hybrids which are considered to be resistant to “normal” potato-root eelworm populations. Resistance tests using the resistance-breaking strain of eelworm and tuberous *Solanum* material from several sources showed that no useful resistance occurred, except in *S. vernei*. Examination of the potato-root eelworm populations from 113 sources showed that about 10% of the populations contained a resistance-breaking strain of the eelworm. The method of estimating the plant susceptibility is described. J.J.H.

224—Experimental Parasitology. New York.

- a. KENT, H. N., 1957.—“Biochemical studies on the proteins of *Hymenolepis diminuta*.” 6 (4), 351–357.
 b. GOLDBERG, E., 1957.—“Studies on the intermediary metabolism of *Trichinella spiralis*.” 6 (4), 367–382.
 c. BIRD, A. F., 1957.—“Chemical composition of the nematode cuticle. Observations on individual layers and extracts from these layers in *Ascaris lumbricoides* cuticle.” 6 (4), 383–403.
 d. KENT, H. N., 1957.—“Studies on protein complexes in the cestode, *Railletina cesticillus*.” 6 (5), 486–490.
 e. FAIRBAIRN, D., 1957.—“The biochemistry of *Ascaris*.” 6 (5), 491–554.

(224a) Kent has examined the composition of four protein complexes he isolated from *Hymenolepis diminuta*. All the protein complexes contained carbohydrate and one contained 10% cerebrosides. Three were examined by moving boundary and paper electrophoresis; at pH 8.6 they behaved homogeneously. Amino-acid composition of the complexes is given. W.P.R.

(224b) Goldberg examined the enzymes and intermediate products involved in terminal oxidations in *Trichinella spiralis*. Both spectroscopic and enzymic studies showed the presence of the cytochrome-cytochrome oxidase system in larvae and adults. Enzymes of the tricarboxylic acid cycle were present in homogenates of larvae, and the formation of citrate from oxalacetate and acetate was demonstrated. W.P.R.

(224c) Bird found that the external cortical layer of the cuticle of *Ascaris lumbricoides* consisted of a tanned protein covered with a layer of lipid. Treatment with pepsin caused a breakdown of the fibre and homogeneous layers; trypsin attacked the homogeneous layer and “substances binding the fibre layers”. Five water-soluble proteins forming 22% of the

total cuticular weight were extracted with borate buffer at pH 8.8. Two of these proteins were heat-labile (55°C.) and three were heat-stable (100°C.). The amino-acid composition of the whole cuticle and the individual layers is given. W.P.R.

(224d) Kent has isolated four protein complexes from *Raillietina cesticillus* which are similar to those previously reported from *Taenia saginata*, *Moniezia expansa* and *Hymenolepis diminuta*. The first and second ($P_{1\alpha}$ and $P_{1\beta}$) are soluble in water at pH 7. $P_{1\alpha}$ contains 92.2% protein and 6% carbohydrate; $P_{1\beta}$ contains 78.7% protein, 15% carbohydrate and 6% cerebroside. The third fraction (P_2 , alpha) is soluble in 0.9% sodium chloride and contains 61.5% protein, 0.41% phosphorus and 28.4% carbohydrate. The fourth is nucleoprotein containing 75% protein, 1% phosphorus and 10% carbohydrate. The fifth was a very small fraction and could not be studied in detail; it is, however, a nucleoprotein containing 50% protein, 0.5% phosphorus and 2% carbohydrate. S.W.

(224e) Fairbairn presents a comprehensive review of our present knowledge of the chemistry, physiology and biochemistry of *Ascaris lumbricoides* of the pig and *Parascaris equorum*, including a short account of the techniques used in such work. Under the heading "Chemistry" he deals with the carbohydrates, lipids and proteins. In the first half of the section on physiology the adult parasites are discussed with reference to feeding, digestion and absorption, excretion, permeability to water, salts and anthelmintics, resistance to proteases, toxic substances, antigens and immunity, respiration and fermentation, carbohydrate metabolism and biological oxidations, lipid metabolism and nitrogen metabolism. In the second half of this section Fairbairn considers the egg, spermatogenesis and oogenesis, fertilization, properties and function of the egg-shell and the biochemistry of embryonation. There is an extensive bibliography. S.W.

225—FAO Plant Protection Bulletin. Rome.

- a. ATKINS, J. G., FIELDING, M. J. & HOLLIS, J. P., 1957.—"Preliminary studies on root parasitic nematodes of rice in Texas and Louisiana." 5 (4), 53-56.

(225a) Twelve plant-parasitic and seven suspected plant-parasitic nematodes were recovered from the roots and their surrounding soil of rice plants in Texas and Louisiana. Treatment of rice plots with Dowfume W-85 (ethylene dibromide), D-D mixture, methyl bromide and Nemagon gave satisfactory nematode control as determined by soil and root samples taken from the plots at three stages of plant growth. Treatment with nematicides also gave consistent and statistically significant higher grain yields than untreated control plots. H.R.W.

226—Farming in South Africa.

- a. ANON., 1957.—"Worms in sheep, goats and cattle." 33 (5), 33-40.
b. KOTZE, J. J., 1957.—"Control parasites by regular treatment." 33 (7), 46-48.
c. KOTZE, J. J., 1957.—"It pays to dose sheep regularly." 33 (7), 48.

(226b) Kotze emphasizes that for the control of helminths in sheep the management of the flocks is as important as the use of anthelmintics provided the correct procedure is followed. In South Africa sheep should be treated with phenothiazine at the end of March and of August, from September to April with tetram and nicotine sulphate in turn and in the middle of July either with tetram or nicotine sulphate. Lambs from one month after birth should receive tetram and nicotine sulphate every month until six months old when they should be given adult treatment. Rotational grazing should follow a seven-day cycle and the pasture should be rested for at least 14 days. As the carrying capacity of pastures of grass, clover and other cultivated pastures is particularly high in the spring and summer, sheep should not be allowed to graze for more than seven days at a time. R.T.L.

(226c) Experiments of over three years' duration are cited which clearly demonstrate the effect of dosing for helminths on wool production in merino sheep. An average of 19.7 lb. of wool was produced by the controls per morgen annually whereas treated sheep gave an average of 25.8 lb. When the ewes which lambed in autumn had free access to a mineral lick and were given anthelmintic treatment regularly, 30.3 lb. was produced per morgen annually, but when lambing took place in the spring and no mineral lick or anthelmintic was provided the wool produced was only 12.7 lb.

R.T.L.

227—Gardeners' Chronicle.

- a. KEVAN, D. K. McE., 1957.—"Watch for this pest—root knot eelworm." 142 (16), 291.

228—Gazette Médicale de France.

- a. ALIVISATOS, C. N. & SPILIOTIS, J. D., 1957.—"Quelques aspects anatomo-pathologiques, cliniques et thérapeutiques de l'échinococcose vertébrale." 64 (5), 417-418, 420, 423-424, 426, 429-430.

229—Giornale di Malattie Infettive e Parassitarie.

- a. BELLONI, G. & MAGGIA, A., 1957.—"I metodi di Ritchie e di Faust (modificato da Rees) nella diagnostica copro-parassitologica." 9 (6), 296-298.
b. NEGRI, R. D. DE & LUPPI, A., 1957.—"L'anchilostomiasi rurale e le altre parassitosi intestinali in un comune del Polesine: Lusia (Rovigo)." 9 (6), 303-309.

(229a) In the examination of faeces by Faust's technique, as modified by Rees, the microscope field contained less debris than when Telemann's technique was used. The helminth eggs from 60 individuals whose faeces were negative to direct smear examination were detected more effectively by these two methods than by Ritchie's technique.

M.MCK.

(229b) Negri & Luppi report an extensive focus of *Ancylostoma duodenale* in the municipality of Lusia, province of Rovigo, Italy. Of the 1,429 people examined (31.3% of the total population) 22.18% were infected.

M.MCK.

230—Harefuah.

- a. BEN-ARI, J., 1957.—[Helminthic infections among the Jewish population of Jerusalem.] 52 (7), 168-171. [In Hebrew: English & French summaries pp. 170-171.]

(230a) Examination of 88,984 faecal samples, during 1934-55, at the Laboratory of the Department of Clinical Microbiology, University Hospital, Jerusalem, showed that the incidence of ascaris and trichuris eggs was low in 1948-55 as compared with 1934-37. In 1955 ascaris eggs were found only in one in 1,000 of the Jewish population, whereas in 1954 nearly 80% of the population in the Arab part of Jerusalem harboured ascaris and trichuris. The drop in the incidence in the Jewish population is attributed to the supply of vegetables from Jewish farms only after the establishment of the State, when contact with the Arab population was broken.

R.T.L.

231—Indian Journal of Agricultural Science.

- a. BHASKARAN, T. R., GHOSH ROY, B. K., SAMPATHKUMARAN, M. A., RADHAKRISHNAN, I. & MUKHERJEE, D. B., 1957.—"Studies on the survival of pathogens in nightsoil compost." 27 (1), 91-102.

(231a) Samples of compost collected from different parts of India and from experimental compost pits were examined bacteriologically for pathogens and for ascaris eggs. The results which are tabulated show that the number and viability of ascaris and hookworm ova decrease rapidly within the first month and are completely destroyed in three months. Provided the composting operations are under controlled supervision the composting of night soil and refuse can be safely used for the disposal of human excrement and has a potential agricultural value.

R.T.L.

232—Indian Journal of Veterinary Science and Animal Husbandry.

- a. VARMA, A. K., 1957.—“On a collection of paramphistomes from domesticated animals in Bihar.” **27** (2), 67-76.

(232a) Varma tabulates the incidence of paramphistomes collected from sheep, goats, cattle, buffaloes, horses and pigs in various localities in the State of Bihar. *Gastrothylax crumenifer* is considered to be the commonest and most wide-spread, the immature forms being responsible for severe and fatal enteritis when present in large numbers. *Calicophoron calicophorum* is recorded from sheep and goats in India for the first time. The young forms may be mistaken for *Paramphistomum cervi* which was not found. *Gigantocotyle explanatum* which was found only in the bile-ducts of buffaloes, often in large numbers, can be distinguished from *C. calicophorum* (of which it is sometimes made a synonym) of cattle, buffaloes, sheep and goats by its habitat in the bile-ducts and by the characteristic tandem position of the testes, with the anterior testis more ventrally situated.

R.T.L.

233—Indian Veterinary Journal.

- a. ENDREJAT, E. & BHATTACHARJEE, M., 1957.—“A field method for detecting trematode eggs particularly schistosome eggs in cattle faeces.” **34** (5), 330-332.
b. RAO, N. S. K. & NAIK, R. H., 1957.—“Nasal schistosomiasis in buffaloes.” **34** (5), 341-343.

(233a) In the tropics the mass examination, on the spot, of faecal samples for helminth eggs by flotation using saturated salt solution proved satisfactory for the detection of eggs with low specific gravity but simple sedimentation gave disappointing results with eggs of high specific gravity. As the Telemann method failed, owing to the evaporation of the ether, a technique was eventually devised in which 2 to 3 gm. of faeces were stirred in a mortar with 10 c.c. of a solution of nitric acid (of 1.41 specific gravity with a pure acid content of 67%) in dilutions of 55% but not exceeding 58%. The mixture was sieved through mosquito netting into a centrifuge tube. 3 c.c. of petrol was added. The tube was vigorously shaken and allowed to rest for four to five minutes. Everything except the small amount of sediment was poured off, water was added, the tube was well shaken and, after settling for three minutes the sediment was pipetted off and distributed in small drops on to microscopical slides for examination. With cattle faeces this gave eggs of amphistomes in 100%, schistosomes in 100%, *Fasciola* spp. in 64% and *Eurytrema* spp. in 64%. The cost is low, as only small quantities of petrol and nitric acid are required, but a rubber apron and gloves should be worn to avoid burning the skin and clothing by the nitric acid.

R.T.L.

(233b) As no lesions are found in nasal schistosome infection of buffaloes while specific lesions occur in cattle and as *Schistosoma nasalis* has been reported in 48.9% of the buffaloes in the Punjab where nasal granuloma has never been seen in cattle, it is suggested that more than one species may be concerned or that in the buffalo the parasite has attained complete compatibility with its host.

R.T.L.

234—Izvestiya Akademii Nauk SSSR. Seriya Biologicheskaya.

- a. MYUGE, S. G., 1957.—[On the trophic characteristics of the potato stem nematode.] Year 1957, No. 3, pp. 357-359. [In Russian.]

(234a) *Ditylenchus destructor* in the potato is physiologically specific. The enzymes excreted by the worms are amylase (7.2-7.5 times more than is excreted by *D. allii*) and a proteolytic enzyme which includes sulph-hydryl groups and is most active at pH 5.0-6.0. In the infected potato tissues respiration increases 1.5 times and breakdown of proteins with subsequent coagulation under the influence of ammonia produces necrosis. Simultaneous hydrolysis of starch contents upsets normal osmosis and causes dehydration of infected cells and turgor of the surrounding cells, leading to the bursting open of the infected portion of the tuber.

G.I.P.

235—Japanese Journal of Experimental Medicine.

- a. MORISITA, T. & MABUCHI, M., 1957.—“On T.M. reaction, a new diagnostic method for ascariasis by the precipitation test.” **27** (1/2), 1-4.

(235a) Morisita & Mabuchi describe a new technique for the diagnosis of ascariasis by a precipitation test which they have found to be very sensitive and specific. Antisera were prepared in rabbits by injecting 2 ml. of *Ascaris* body fluid every four days, three injections being usually sufficient to give a precipitin titre of 1:10,000 to 1:100,000. The antigen was prepared from human faeces by treating with hydrochloric acid and heat. Details of the procedure are given. This test has also been used in cases of ancylostomiasis, enterobiasis and fluke diseases, using the corresponding antiserum. S.W.

236—Japanese Journal of Medical Science and Biology.

- a. HARADA, F., 1957.—“Studies on hookworm larvae. V. Further observations of infective larvae in migration towards vegetables.” **10** (2), 121-128.
b. HARADA, F., 1957.—“Studies on hookworm larvae. VI. On the behaviour of infective larvae living in the compost manure (a preliminary experiment).” **10** (2), 129-139.
c. HARADA, F., 1957.—“Studies on hookworm larvae. VII. Migratory behaviour of infective larvae developed in the seed-bed.” **10** (2), 141-148.

(236a) Harada has shown experimentally, using infective larvae of *Ancylostoma caninum* and young radishes, that few larvae migrate on to the vegetables even in the spring, which is the mildest time of year in Japan. Of those which did climb on to the plants most died during the day. Migration was more active at night under conditions of greater moisture but when it was windy and there was little or no dew the larvae could not migrate actively. S.W.

(236b) To test the ability of infective hookworm larvae to survive in compost heaps, Harada placed larvae of *Ancylostoma caninum* on rice straws 60 cm. long and kept part of the straw at room temperature (summer and winter) and heated another part to 50°C. to 60°C., corresponding to the temperature reached in fermenting compost. Larvae which migrated to the warmed part were invariably dying but those that distributed themselves in the cooler parts were very active and tended to become aggregated at the distal end of the straws, especially in summer. This indicates that in compost manure heaps, infective hookworm larvae would tend to migrate to the peripheral layers where they would be most likely to come into contact with and infect man. S.W.

(236c) As in rural areas of Japan, tomatoes, cucumbers, water-melons etc., are frequently raised in seed-beds made up from rice straw and leaves to which human nightsoil is added, Harada has studied the survival and migration of hookworm larvae (*Ancylostoma caninum*) in them. Filariform larvae were first recovered within five days of infected faeces being put on to the soil; the numbers increased rapidly to a peak of 200 per gramme of surface soil. After ten days there was a maximum number of 225 larvae per ten vegetables, greater numbers being found on those parts which were wet with dew. Some larvae survived more than a month on the surface soil. S.W.

237—Journal of the American Medical Association.

- a. DENT, J. H., 1957.—“Cysticercosis cerebri—cestode infestation of human brain. Report of a case occurring in Louisiana.” **164** (4), 401-405.
b. AIKEN, D. W. & DICKMAN, F. N., 1957.—“Surgery in obstruction of small intestine due to ascariasis.” **164** (12), 1317-1323.
c. MELTZER, L. E. & BOCKMAN, A. A., 1957.—“Trichinosis involving the central nervous system. Treatment with corticotropin (ACTH) and cortisone.” **164** (14), 1566-1569.

(237c) A case of trichinosis with clearly defined focal cerebral damage responded dramatically to daily treatment, for three days, with 300 mg. of cortisone and 80 units of repository corticotropin intramuscular injections reduced to 200 mg. of cortisone and 60 units of corticotropin for three further days. Prednisone was then given in decreasing amounts for 10 days after which the patient was discharged perfectly well. R.T.L.

238—Journal of the American Society of Sugar Beet Technologists.

- a. BAUSERMAN, H. M. & OLSON, R. F., 1957.—“Nematode cyst hatch rate as influenced by fractions of beet root juice.” **9** (5), 387-392.

(238a) Various constituents of pressed sugar-beet juice were isolated by a paper chromatography method. A few drops of the various solutions were then placed in cells containing three beet eelworm cysts. The number of eelworms which emerged were counted every twenty-four hours. Bauserman & Olson state that the data obtained by this method indicate that inositol, alanine, isoleucine, gamma amino butyric acid, aspartic acid and saporin tend to inhibit hatching of eelworms when compared with water. Galactinol, glutamic acid, glycine, valine, glutamine and sucrose stimulate hatch above the water level. H.R.W.

239—Journal of the American Veterinary Medical Association.

- a. CLORE, E. E. & WILLE, Jr., T., 1957.—“Observations on the use of sodium silicofluoride in feed for the removal of whipworms from swine.” **130** (11), 495-496.
b. CAMPBELL, D. J. & KINGSCOTE, A. A., 1957.—“*In vitro* and *in vivo* tests of polymeric piperazine-1-carbodithioic acid as an equine boticide and anthelmintic.” **130** (12), 533-536.

(239a) The palatability and toxicity of sodium silicofluoride and its anthelmintic efficacy against ascaris in pigs are similar to those of sodium fluoide in the same concentration. It also proved highly effective against whipworms. The dosage rate recommended is for each 25 lb. body-weight, 1 lb. of a ration mixture containing 1% of sodium silicofluoride, 20% brown sugar and 79% of a palatable complete feed. If the body-weight is over 25 lb. the dosage is 2 lb. of the ration for the first 50 lb. body-weight and an additional 1 lb. for each 50 lb. up to a maximum of 5 lb. to any animal of 200 lb. or over. R.T.L.

(239b) The effects of Safersan (polymeric piperazine-1-carbodithioic acid) on bots and various intestinal helminths as ascertained at autopsy on a horse after the administration of a dose of 60 gm. followed by 300 c.c. of 1:200 hydrochloric acid are tabulated. R.T.L.

240—Journal of the Bombay Natural History Society.

- a. TANDON, R. S., 1957.—“The liver fluke of the frog, *Rana tigrina*—a new record of *Mehraorchis ranarum* Srivastava, 1934 (Pleurogenitinae).” **54** (2), 468-469.

(240a) *Mehraorchis ranarum*, which Srivastava found encysted in the body-cavity of *Rana cyanophlyctis*, has now been found living in the bile-ducts of *Rana tigrina*. The eggs were present in large numbers in the gall-bladder. R.T.L.

241—Journal of Helminthology.

- a. RAWSON, D., 1957.—“The anatomy of *Eubothrium crassum* (Bloch) from the pyloric caeca and small intestine of *Salmo trutta* L.” **31** (3), 103-120.
b. YEH, L. S., 1957.—“Studies on a trematode and a new nematode from a bat from Northern Rhodesia.” **31** (3), 121-125.

(241a) A detailed anatomical description is given of *Eubothrium crassum* from *Salmo trutta* in Lake Windermere, and the structure of its scolex and strobila is compared with that of *E. salvelini*. The second portion of the uterine duct of *E. crassum*, which lies between the central chamber of Mehlis' gland and the uterine sac, functions as the “fertilization chamber”. A part of the vagina serves as a receptaculum seminis and the organ previously described as such is now termed “vagina sac” as it is thought to serve for the propulsion of male and female cells into the uterine duct. Maturation divisions of the egg are described and illustrated as evidence of normal maturation in cestodes. G.I.P.

(241b) *Molinostrongylus pseudornatus* n.sp. from a small bat in Northern Rhodesia resembles *M. ornatus* but its spicule is only half as long, the postero-lateral ray originates lower down on the medio-lateral ray and, in the female, the stout and conspicuous lateral alae end abruptly near the vulval opening. In *M. ornatus* the alae extend to the end of the body and there is also a dorsal and a ventral ala, absent in the new species. In the same bat were

241—Journal of Helminthology (cont.)

- c. YEH, L. S., 1957.—“ On a new nematode, *Spirocamallanus mazabukae* sp.nov., from freshwater fish in Southern Africa.” **31** (3), 126–130.
- d. WHITLOCK, H. V., 1957.—“ A technique for staining and counting *Syphacia obvelata* in the faeces and ingesta of mice.” **31** (3), 131–134.
- e. NICHOLAS, W. L. & McENTEGART, M. G., 1957.—“ A technique for obtaining axenic cultures of rhabditid nematodes.” **31** (3), 135–144.
- f. SOULSBY, E. J. L., 1957.—“ Studies on the serological response in sheep to naturally acquired gastro-intestinal nematodes. II. Responses in a low ground flock.” **31** (3), 145–160.

found specimens of *Prosthodendrium cordiforme* with large testes (0.17–0.25 mm.), the oral sucker much larger than the ventral sucker and the vitellaria meeting dorsally. The specimens agree with Modlinger's material but not with that of Braun who described small testes, an oral sucker slightly smaller than the ventral sucker and the vitellaria in two separate clusters. If on further examination of European material this agrees with that described by Braun, a new species should be erected for the specimens described by the present author and by Mödinger.

G.I.P.

(241c) *Spirocamallanus mazabukae* n.sp. from the intestine of Homa fish from the River Kafue in Northern Rhodesia, resembles *S. murrayensis* except in the size of the spicules which measure 0.470–0.473 mm. and 0.272–0.283 mm. while those of *S. murrayensis* are 0.29 mm. and 0.20 mm. long. A single female of *Spirocamallanus* sp., also found in the Homa fish, closely resembles that of *S. mazabukae* but cannot be identified with this species because of the shorter and more globular buccal capsule which has fewer oblique thickenings and a forwardly directed vagina. In *S. mazabukae* the vagina runs backwards before sharply turning anteriorly.

G.I.P.

(241d) The method here described for the examination of faeces and intestinal contents from experimentally treated mice for the presence of oxyurid worms is much quicker and more efficient than the microscopical examination of diluted faeces. The intestinal or faecal material, after staining with 20% iodine in potassium iodide solution, is placed in a jar with a mesh lid (40 meshes per inch) which is suspended in a metal cylinder with a sieve bottom (80 meshes per inch). The apparatus is placed in a sink and a stream of water is directed from a rotary spray on to the mesh lid of the jar. Washing for a few minutes suffices. The adult worms remaining in the jar and the immature worms collected on the sieve bottom of the cylinder are then repeatedly washed into enamel trays and can be easily seen and counted. G.I.P.

(241e) Axenic cultures of *Caenorhabditis briggsae*, *Rhabditis axei* and *R. maupasi* were prepared by two methods based on killing the gravid females in a sterilizing agent and transferring them to an antibiotic medium where the eggs hatched. By the first method the females were killed in merthiolate agar and transferred to an antibiotic agar medium. This method was laborious as the larvae had to be collected by needle. In the second method, suitable for obtaining large numbers of larvae, the females were killed by dropping them into a wire gauze boat in hydrogen peroxide. The boat and the contained females were washed and then suspended in the mouth of a centrifuge tube full of an antibiotic solution. The hatching larvae then passed through the gauze and were collected by centrifuging. One to four larvae were recovered per gravid female. Both methods gave similar yields in successful experiments. Only about 10% of the treated larvae proved to be contaminated.

M.McK.

(241f) From observations made throughout one year on a flock of sheep in south-west England, Soulsby has demonstrated that there is an inverse relationship between faecal egg counts (of nematodes other than *Nematodirus* spp. and *Strongyloides*) and antibody titres. This is also evident on a seasonal basis as shown during the “spring rise”. During January and February there was a marked depression in antibody titres; this was followed by a marked stimulation of antibody production immediately before the “spring rise”; there was then a period of decline in titre for as long as a month in many cases. The “spring rise” was terminated by a self-cure mechanism characterized by a sudden reduction in egg counts with a correspondingly noticeable elevation of the antibody titre.

S.W.

241—Journal of Helminthology (cont.)

- g. SOULSBY, E. J. L., 1957.—“An antagonistic action of sheep serum on the miracidia of *Fasciola hepatica*.” **31** (3), 161–170.
- h. SANDARS, D. F., 1957.—“A note on the description of *Dibothriocephalus medius* Fahmy, 1954.” **31** (3), 171–172.
- i. BISSERU, B., 1957.—“On three known trematodes from African birds, with notes on the genera *Typhlocoelum*, *Paryphostomum* and *Petasiger*.” **31** (3), 173–186.
- j. BISSERU, B., 1957.—“On the genus *Opisthorchis* R. Blanchard, 1895, with a note on the occurrence of *O. geminus* (Looss, 1896) in new avian hosts.” **31** (3), 187–202.

(241g) Soulsby has demonstrated that in the sera of sheep, whether infected with *Fasciola hepatica* or no, there is a constituent which is lethal to miracidia of *F. hepatica*. This constituent is thermostable but requires activation by the thermolabile components of guinea-pig complement. It is compared with similar substances present in other normal sera and its mode of action is discussed. S.W.

(241h) From an examination of the type material of *Dibothriocephalus medius* Fahmy, 1954 it appears that the terminal segment of the immature worm was mistakenly described as the holdfast organ. The major diagnostic characters of *D. medius* are therefore confined to the relative position of the gonopore, the uterine pattern and the relatively small variation in egg size. It is suggested that the study of further material is required before *D. medius* is considered valid. M.MCK.

(241i) *Typhlocoelum cucumerinum*, *Paryphostomum radiatum* and *Petasiger variospinosus* are illustrated and described from birds from Northern Rhodesia. The first two genera are recorded for the first time from Africa and *P. variospinosus* was found in the new host *Anhinga rufa leuallantii* “in a new locality”. Bisseru reviews the different classifications of the Cyclocoelidae. He does not agree with Bhalerao (1931) that *Artyfechinostomum* is a synonym of *Paryphostomum* but considers *P. indicum* a synonym of *Echinostoma malayanum*, which he transfers to *Artyfechinostomum* as *A. malayanum* n.comb. *Petasiger aeratus* and *P. coronatus* are incorporated in *Echinostomus* as new combinations and *Petasiger* is divided into two groups: the *P. exaeretus* group (from cormorants and darters) which has 27 spines, and the *P. pungens* or *P. megacanthus* group (from grebes) which has 19 to 21 spines. M.MCK.

(241j) In this critical revision of *Opisthorchis* the diagnosis of the genus is amplified. *Amphimerus*, *Notaulus*, *Gomtia*, *Evranorchis* and *Euamphimerus* are considered its synonyms. Bisseru lists with their hosts the 29 species which he recognizes. *O. geminus*, which is recorded from two new avian hosts, *Plectropterus gambensis* and *Dendrocygna viduata*, is redescribed and illustrated. M.MCK.

242—Journal of Heredity.

- a. SHORT, R. B., 1957.—“Chromosomes and sex in *Schistosomatium douthitti*. Trematoda: Schistosomatidae.” **48** (1), 3–6.

(242a) From a study of the chromosomes of cercariae of known sex, Short has shown that the female of *Schistosomatium douthitti* is heterogametic for sex. The diploid chromosome number in both sexes is 14 and all the chromosomes are identifiable morphologically. The female possesses one heteromorphic pair (ZW). In a male triploid the components were ZZW whereas a female triploid was ZWW, indicating that the W chromosome is not strongly female-determining. It is possible that sex determination is in accordance with Bridges' genic balance theory. S.W.

243—Journal of Immunology.

- a. GARABEDIAN, G. A., MATOSSIAN, R. M. & DJANIAN, A. Y., 1957.—“An indirect hemagglutination test for hydatid disease.” **78** (4), 269–272.

(243a) The authors describe an indirect haemagglutination test for the diagnosis of hydatid disease which they have found to be both more sensitive and more specific than the complement fixation test. It has also the advantages of being simpler to perform and less

expensive. Positive results were obtained in 13 of 16 known cases with the haemagglutination test compared with 11 positive to complement fixation. No false positives occurred in patients with other diseases.

S.W.

244—Journal of the Marine Biological Association of the United Kingdom.

- a. LLEWELLYN, J., 1957.—“The larvae of some monogenetic trematode parasites of Plymouth fishes.” **36** (2), 243–259.

(244a) Llewellyn outlines a technique for culturing larvae of the Monogenea and describes the larvae of *Diplectanum aequans*, *Entobdella soleae*, *Acanthocotyle lobianchi*, *Rajonchocotyle emarginata*, *Plectanocotyle gurnardi*, *Anthocotyle merlucii*, *Gastrocotyle trachuri*, *Pseudaxine trachuri*, *Microcotyle labracis*, *Dididophora merlangi*, an unidentified microcotylid, *Polystoma integerrimum* and *D. luscae*. Of these, only the last two have been previously described. He suggests that the term “oncomiracidium” should be used for the larvae of monogenetic trematodes. A tentative classification of the larvae is proposed and compared with that of the adults.

S.W.

245—Journal de Médecine de Lyon.

- a. MULLER, B., BAYLE, J. J. & BRONDEL, H., 1957.—“Considérations cliniques et biologiques sur l'ankylostomose observée actuellement dans la région de Saint-Etienne. A propos de 39 observations personnelles.” **38** (893), 247–254. [English & Esperanto summaries p. 254.]

(245a) The authors report that in the miners of the Saint Etienne region in France, ancylostomiasis appears to be increasing. This may be due to the employment of labour from southern Europe and the colonies. In the 39 cases which they have studied there did not appear to be a direct correlation between the intensity of the infestation and the anaemia. Tetra-chlorethylene was the most effective anthelmintic used.

S.W.

246—Journal of Parasitology.

- a. ROWLAND, M. E. & RENDTORFF, R. C., 1957.—“Failure to transmit mouse leukemia by *Trichinella*.” **43** (4), 412.
 b. BURNETT, H. S., PARMELEE, W. E., LEE, R. D. & WAGNER, E. D., 1957.—“Observations on the life cycle of *Thelazia californiensis* Price, 1930.” **43** (4), 433.
 c. RAHMAN, M. H., 1957.—“Observations on the mode of infection of the hump of cattle by *Stephanofilaria assamensis* in East Pakistan.” **43** (4), 434–435.

(246b) Developmental forms of *Thelazia californiensis* were found in laboratory-reared *Fannia canicularis* after these had been fed with its sheathed embryos. Similar developmental forms were present in wild specimens of *F. benjamini* collected near San Bernardino in California.

R.T.L.

(246c) In a survey of cattle in East Pakistan 25% of the 25,000 animals examined had hump sore. Two bullocks with hump sore and one bullock and one cow without hump sore were kept for three weeks in a fly-proof shed. About 1,000 wild flies were introduced into the shed and had to procure their food from the cattle. One hundred of the flies were dissected. No filarial larvae were found in the gut or proboscis, but seven of the flies had filarial larvae on the surface of the body. These became detached when the flies were put into water and were identified as larvae of *Stephanofilaria assamensis*. Sores artificially made by scraping the sides of the humps were found to contain filarial larvae. More flies were introduced into the fly-proof shed in a further period of 21 days and 200 flies were dissected. Thirty-five of these flies had larvae on their body surface. The controls did not develop hump sore while kept with the infected bullocks. Rahman concludes from these experiments that transmission by the flies is mechanical and direct.

R.T.L.

246—Journal of Parasitology (cont.)

- d. WEHR, E. E. & HWANG, J. C., 1957.—“*Oxyspirura* (*Yorkeispirura*) *pusillae* n.sp. (Nematoda: Thelaziidae) from the orbital cavity of the brown-headed nuthatch, *Sitta pusilla pusilla* Latham, 1790.” 43 (4), 436–439.
- e. LARSH, Jr., J. E. & GOULSON, H. T., 1957.—“The effectiveness of cadmium oxide against *Trichinella spiralis* in mice.” 43 (4), 440–445.
- f. READ, C. P., 1957.—“The oxyurid nematodes of rodents. I. The genus *Citellina* Prendel.” 43 (4), 446–450.
- g. IKEZAKI, F. M. & HOFFMAN, G. L., 1957.—“*Gyrodactylus eucaliae* n.sp. (Trematoda: Monogenea) from the brook stickleback, *Eucalia inconstans*.” 43 (4), 451–455.
- h. DERY, D. W., 1957.—“An unsuccessful attempt to infect bats with *Schistosomium douthitti*.” 43 (4), 455.
- i. HSÜ, H. F. & HSÜ, S. Y. LI, 1957.—“On the intraspecific and interstrain variations of the male sexual glands of *Schistosoma japonicum*.” 43 (4), 456–463.

(246d) *Oxyspirura* (*Yorkeispirura*) *pusillae* n.sp. from the orbital cavity of *Sitta p. pusilla*, captured in Georgia, U.S.A. very closely resembles *O. (Y.) tsingchengensis* but the female genital opening is surrounded by a cuticular thickening and the long spicule lacks undulations. A key is given to the six species which now comprise the subgenus *Yorkeispirura* after the removal of *O. (Y.) crassa* in which the buccal capsule is not subdivided by a constriction and the spicules are subequal and similar. R.T.L.

(246e) A striking reduction occurred in the number of adults and larvae of *Trichinella spiralis* recovered from mice which had received a single infection with 200 trichina larvae and had been fed on pellets in which cadmium oxide had been incorporated at the rate of 0.015%. An even greater reduction occurred in the number of adults recovered after the mice were reinfected. The reduction was greater when feeding of the medicated pellets began before the mice were infected than when it did not commence until two days after the administration of the infecting dose. This suggests that the cadmium oxide was most active against the pre-adult stages of the parasite. These results indicate that this chemical should now be tested against trichinella infection in pigs. R.T.L.

(246f) Read has reached the conclusion that there is a single species of *Citellina*, viz., *C. triradiata* (Hall), that it has a cosmopolitan distribution in ground squirrels and marmots and that *C. alatau*, *C. alpina*, *C. dispar*, *C. marmotae* and *C. petrowi* are synonyms and *C. levini* a species inquirendum. The type specimen of *C. marmotae* has a poorly sclerotized gubernaculum. Examination of the type specimen of *C. triradiata* shows that the structure described by Hall as a spicule is a gubernaculum and the terminal portion of a weakly sclerotized spicule. Prendel's description of the spicule in *C. dispar* as of 1.64 mm. in length is a typographical error for 0.164 mm. R.T.L.

(246g) *Gyrodactylus eucaliae* n.sp. is described and figured from the gills and skin of *Eucalia inconstans* in North Dakota and is briefly compared with the nine other species of *Gyrodactylus* found in North America. Although fatal gyrodactylid infection has been reported in goldfish and bullheads, there was no evidence of irritation or fatality in these infected brook sticklebacks. R.T.L.

(246i) Four types of variation were observed in 4,064 mature male *Schistosoma japonicum* from Chinese, Formosan, Japanese and Philippine geographical strains in 13 experimentally infected host species. The testes varied in number from 1 to 14 and were arranged tandem or non-tandem. 90.5% of the worms had seven testes. In one specimen a single testis was present just anterior to the reunion of the gut branches. Six hermaphrodites occurred in 2,547 males obtained from the dog, hamster and mouse bisexually infected with the Chinese strain. R.T.L.

246—Journal of Parasitology (cont.)

- j. OSWALD, V. H., 1957.—“A redescription of *Pseudodiorchis reynoldsi* (Jones, 1944) (Cestoda: Hymenolepididae), a parasite of the short-tailed shrew.” **43** (4), 464-469.
- k. FISCHTHAL, J. H., 1957.—“*Cestrahelminis laruei* n.g., n.sp., a digenetic trematode from the muskellunge, *Esox m. masquinongy* Mitchell.” **43** (4), 484-487.
- l. HUNTER, W. S. & VERNBERG, W. B., 1957.—“Further observations on the life-cycle of *Gynaecotyla adunca* (Linton, 1905).” **43** (4), 493-494.
- m. KISNER, R. L., 1957.—“The chromosomes of *Hymenolepis diminuta*.” **43** (4), 494-495.
- n. HEDRICK, R. M. & DAUGHERTY, J. W., 1957.—“Comparative histochemical studies on cestodes. I. The distribution of glycogen in *Hymenolepis diminuta* and *Raillietina cesticillus*.” **43** (5), 497-504.

(246j) From Oswald's study of *Pseudodiorchis reynoldsi* it emerges that it has about 250, not 100, rostellar hooks. The number of testes varies from one to four, three testes occur not infrequently but in the majority of the proglottides there are only two. Moreover the anterior testis is smaller than the posterior testis and becomes functional later. These facts are considered by Oswald to support the hypothesis that the reduction in the number of testes in the genera of Hymenolepididae probably resulted from a gradual loss of testicular primordia rather than from a fusion of two or more primordia. R.T.L.

(246k) Fischthal having concluded, from serial sections, that the material from *Esox m. masquinongy* recorded by him in 1950 as *Macroderoides spiniferus* was erroneously identified, accepts La Rue's personal opinion that it “seems to have a complex of characters which do not clearly place it in any of the recognized genera or families” and redescribes and figures it as *Cestrahelminis laruei* n.g., n.sp. of uncertain family relationship. The generic name refers to the numerous spines on the body, in the cirrus and metraterm. R.T.L.

(246l) In their earlier experiments on the life-cycle of *Gynaecotyla adunca*, Hunter & Vernberg [for abstract see Helm. Abs., 22, No. 147a] assumed that most of the cercariae in their fiddler crabs would have become encysted as the crabs then used had been isolated in the laboratory for a minimum of two weeks. They have since discovered that unencysted cercariae may still be present in crabs which have been kept for over four months. Nevertheless, these forms could not be confused with the stages of development at 48, 72 and 96 hours after infection. Metacercariae with the stylet still visible were recovered only from the green glands nine days and, at the same stage of development, three weeks after the crabs had been exposed to cercariae. This suggests that the cercariae may circulate through the body for some time before entering the green glands or that an immune reaction meets a new infection. Developmental stages and cysts recovered from *Talorchestia megalophthalmia* could not be distinguished from those of *Gynaecotyla adunca*. This supports their previous opinion that *G. nassicola* is a synonym of *G. adunca*. R.T.L.

(246m) Kisner figures the late prophase, metaphase and early anaphase stages in the chromosomes of *Hymenolepis diminuta* and confirms that 12 is the normal number of chromosomes, as reported by Jones. R.T.L.

(246n) In *Hymenolepis diminuta* and *Raillietina cesticillus* large amounts of glycogen are stored in the medullary parenchymatous tissue, especially that adjacent to the osmoregulatory canals and the reproductive organs, and in the sperm and eggs. *R. cesticillus*, unlike *H. diminuta*, contains non-glycogenous material in considerable amount in the parenchymal and subcuticular musculature, the medullary parenchyma and the walls of the sperm ducts. Part of the glycogen in the embryos of both species is provided by the vitelline cells. Polysaccharide is absent from the reproductive organs, except the vitellaria. The significance of the glycogen distribution is discussed. R.T.L.

246—Journal of Parasitology (cont.)

- o. OGREN, R. E., 1957.—"Morphology and development of onchospheres of the cestode *Oochoristica symmetrica* Baylis, 1927." **43** (5), 505-520.
- p. BERG, E., 1957.—"The effects on *Schistosoma mansoni* of castration and glucose supplementation in male albino mice." **43** (5), 520.
- q. WARREN, McW. & DAUGHERTY, J., 1957.—"Host effects on the lipid fraction of *Hymenolepis diminuta*." **43** (5), 521-526.
- r. HEYNEMAN, D. & VOGEL, M., 1957.—"Glycogen distribution in cysticercoids of three hymenolepidid cestodes." **43** (5), 527-531.
- s. CIORDIA, H., VEGORS, H. H. & BIZZELL, W. E., 1957.—"Freezing procedures for greater flexibility in application of the digestive method for post-mortem recovery of cattle nematodes." **43** (5), 532-534.
- t. RITTERSON, A. L., 1957.—"The Chinese hamster (*Cricetulus griseus*) as an experimental host for *Trichinella spiralis*." **43** (5), 542-547.
- u. HUSSEY, K. L., 1957.—"*Syphacia muris* vs. *S. obvelata* in laboratory rats and mice." **43** (5), 555-559.

(246 o) Ogren describes briefly the oocytes and early cleavage pattern of *Oochoristica symmetrica* and, in more detail, the formation of the morula, the development of the hooks, parenchyma and muscles, the appearance and development of the membrane, the epidermal glands, and the formation of the "plastin" cells or compact germinative cells. The living oncosphere was difficult to study unstained but staining *in vivo* with neutral red, after breaking the outer vitelline shell to release the embryo, showed a regional colouration, the germinative cells staining bright red or with red granules and the granules of the epidermal cells yellow. Flame cells were not present in the oncospheres but, as reported previously, appeared in the late cysticercoid in the beetle. These observations are compared with those recorded in other groups of cestodes. S.W.

(246 p) When mice were castrated before being infected with *Schistosoma mansoni* the mean number of male schistosomes which subsequently developed decreased considerably but the number tended towards the control mean when 10% glucose had been added to the drinking water. The female worm mean counts showed very little change. R.T.L.

(246 q) When *Hymenolepis diminuta* is grown in different host species and host strains there are variations in its fresh weight and in the total production of ether-soluble material. The degree of saturation of the fatty acids or the combination of saturated and unsaturated fatty acids incorporated into the lipid fraction corresponds to the environmental variations in the gut of the different hosts. Warren & Daugherty discuss the significance of their results and stress the importance also of clearly defining the host used in all studies on helminth physiology. R.T.L.

(246 r) The occurrence of large amounts of polysaccharide, probably glycogen, in the tail and scolex of the cysticercoids of *Hymenolepis nana*, *H. diminuta* and *H. citelli* is revealed by staining with Lugol's iodine. The glycogen increases with the growth of the larvae. R.T.L.

(246 s) The application of Herlich's recently described digestion-freezing method for post-mortem recovery of nematodes from the gut of ruminants [for abstract see Helm. Abs., 25, No. 133a] was tested on the stomachs of rabbits infected with *Trichostrongylus axei* larvae. The number and morphology of the larvae recovered were not adversely affected. The technique also gave satisfactory results when used to determine the species and numbers of worms in the stomach and intestine of 42 calves. R.T.L.

(246 t) From an experimental study of the development of *Trichinella spiralis* in the Chinese hamster and in the golden hamster, it is concluded that the former is a more suitable host for the intestinal phase and the latter for the muscle phase. R.T.L.

(246 u) From anal swabs and adult worms obtained from rats and mice maintained in laboratories in the U.S.A. and Canada, *Syphacia obvelata* was the species commonly present in laboratory mice and *S. muris* the common species in rats, although the mouse was occasionally infected with *S. muris* and the rat with *S. obvelata*. Cross infections were produced

246—Journal of Parasitology (cont.)

- v. HILL, C. H., 1957.—"Distribution of larvae of *Trichinella spiralis* in the organs of experimentally infected swine." **43** (5), 574-577.
- w. DUNAGAN, T. T., 1957.—"*Paramonostomum malerischi* n.sp. (Trematoda: Digenea: Notocorylidae) from the emperor goose (*Philacte canagica* L.) in Alaska." **43** (5), 586-589.
- x. NEWTON, W. L., 1957.—"Experimental transmission of the dog heartworm, *Dirofilaria immitis*, by *Anopheles quadrimaculatus*." **43** (5), 589.
- y. TROMBA, F. G. & STEELE, A. E., 1957.—"The chromosomes of *Stephanurus dentatus* (Nematoda: Strongyloidea)." **43** (5), 590.

experimentally. The two species differ in the size of the egg, the position of the excretory pore in both sexes, the position of the vulva and, in the mature male, the positions of the mamelons and the length of the tail. Until now *S. muris* does not appear to have been identified in North America.

R.T.L.

(246v) Hill tabulates the number and distribution of trichina larvae recovered, by artificial digestion, from the various organs of experimentally infected pigs. The order of frequency was: stomach wall, testes, liver, brain, lungs, small intestine, pancreas, aorta, urinary bladder contents, urinary bladder wall, heart. Hill stresses the importance of cooking or processing all edible portions of the pig's carcass whether or no they contain striated muscle fibres.

R.T.L.

(246w) In *Paramonostomum malerischi* n.sp. from the emperor goose *Philacte canagica*, in Alaska, the gonopore is anterior to the bifurcation of the gut whereas it is posterior in the 14 other species of the genus except *Paramonostomum alveatum*, *P. pseudalveatum*, *P. casarcum* and *P. querquedula*. *P. malerischi*, however, has 12 to 15 transverse uterine loops, the cirrus pouch reaches the mid region of the body and the eggs in the anterior part of the uterus are 26-28 μ long. The species of *Paramonostomum*, with their hosts and localities, are tabulated.

R.T.L.

(246x) A dog, born and reared in an animal room, was injected with about 50 to 75 infective larvae of *Dirofilaria immitis* obtained by dissection from *Anopheles quadrimaculatus* which had been fed, a fortnight previously, on an infected dog. Microfilariae did not show in the blood until the seventh month after the injection. Another dog similarly reared was exposed to the bites of infected *A. quadrimaculatus* on five occasions during three weeks. Monthly examinations failed to reveal microfilariae during the succeeding six months. None were made during the seventh and eighth months but in the ninth month *D. immitis* microfilariae were identified and the numbers rose to 20 per 20 cu.mm. in the following month.

R.T.L.

(246y) In *Stephanurus dentatus* the diploid number of chromosomes is eleven in the male and twelve in the female.

R.T.L.

247—Journal of Pathology and Bacteriology.

- a. WAINWRIGHT, J., 1957.—"*Coenurus cerebralis* and racemose cysts of the brain." **73** (2), 347-354.
- b. SYMMERS, W. St. C., 1957.—"Two cases of eosinophilic prostatitis due to metazoan infestation (with *Oxyuris vermicularis*, and with a larva of *Linguatula serrata*)." **73** (2), 549-555.

(247a) Wainwright describes and illustrates from South Africa an instance of *Coenurus cerebralis* in the eye and four cases with sterile parasitic racemose cysts at the base of the brain and in the ventricle. Previously recorded cases are critically discussed.

R.T.L.

248—Journal of Pediatrics.

- a. JENKINS, M. E., 1957.—"Enterobiasis in children. The use of zinc oxide ointment locally as a therapeutic agent." **50** (6), 714-715.

(248a) On the assumption that the life-cycle of *Enterobius vermicularis* would be broken by preventing the females from laying their eggs on the perianal surface, zinc oxide ointment

was applied, approximately one eighth inch thick, to the anal orifice and perianal folds of 25 children thrice daily and at bedtime for 21 days. 20 of the children were cured. Seven spontaneous cures occurred in 30 untreated children kept under observation as controls. 17 out of 19 children who received piperazine citrate syrup at the rate of one teaspoonful twice daily for a week and again for eight days after an interval of one week were also cured.

R.T.L.

249—Journal of the Royal Army Medical Corps.

- a. SWYNNERTON, C. R., 1957.—“Bilharziasis and the 1st (West African) Brigade.” **103** (2), 98–101.

(249a) As a layman, Swynnerton gives a general account of the circumstances in which a serious outbreak of schistosomiasis haematobia occurred in 1944 in the 1st West African Brigade while training in jungle warfare in the region of large Epe lagoon lying between Lagos and the Niger. There were more than a dozen medical officers and the staff of hygiene section in the Brigade, all of whom were among those who had to be treated.

R.T.L.

250—Journal of Tropical Medicine and Hygiene.

- a. SCHOFIELD, F. D., 1957.—“The complement-fixation reaction in loiasis and *Acanthocheilonema perstans* infections.” **60** (7), 170–172.

(250a) Schofield has studied the case histories of 12 individuals with untreated filarial infections and gives the results of the complement fixation test, using *Dirofilaria immitis* antigen. Those with very short and those with very long histories of symptoms of the disease gave a high proportion of negative C.F.T. reactions while a group with histories of one to three years' duration all gave positive reactions. Only 15% of 53 cases with *Acanthocheilonema perstans* embryos in the blood, and with no evidence of other filarial infections, gave a positive C.F.T. reaction. It is considered that the occurrence of a positive reaction in such cases is usually an indication of the presence of another filaria species also.

R.T.L.

251—Karakulevodstvo i Zverovodstvo.

- a. MALISHEV, K. G., 1957.—[Synthetic arecoline as an anthelmintic in worm diseases of silver black and blue arctic foxes.] **10** (1), 52. [In Russian.]

(251a) Synthetic arecoline was not toxic and was as effective as that of plant origin against helminth infections in silver-black and blue arctic foxes. Doses of 0.005 [gm.] per kg. body-weight, given in food after fasting for 16 to 18 hours, were efficient against *Dipyllobothrium latum*, *Toxocara canis* and *Toxascaris leonina* in all 20 foxes and against *Mesocostoides lineatus* in 17 out of the 20 foxes. The worms were passed within one to four hours of treatment. 5 ml. of an 0.1% aqueous solution, injected subcutaneously, proved effective in 11 out of 16 foxes against *M. lineatus* and in all 16 foxes against the other infections. Worms were passed in two hours, starting 15 to 20 minutes after infection.

G.I.P.

252—Kieler Meeresforschungen.

- a. MEYL, A. H., 1957.—“Beiträge zur freilebenden Nematodenfauna Brasiliens. II. Weitere neue oder wenig bekannte Nematodenarten.” **13** (1), 125–133.

(252a) Continuing his report of free-living nematodes from Brazil [for abstract see Helm. Abs. 25, No. 266q], Meyl describes the following new forms: *Chronogaster brasiliensis* n.sp., *Dorylaimus parasubtilis* n.sp., *D. santosi* n.sp., *D. sveltus* n.sp., *Aporcelaimus seinhorsti* n.sp., *A. vanderlaani* n.sp., *Tylencholaimus parateres* n.sp., *Enchodelus brasiliensis* n.sp. and *Amphidelus* sp. and adds to the descriptions of six known species.

M.MCK.

253—Landbouwkundig Tijdschrift.

- a. DILZ, K. & BIJLOO, J. D., 1957.—“De gevolgen van het gebruik van chloorgas als ontsmettingsmiddel van cultuurgrond.” **69** (6), 467-470. [English summary p. 470.]

(253a) Chlorine gas was injected into a sandy soil to control potato-root eelworm. The harmful effects of this treatment on plant growth are discussed. The soil became acid and there was an accumulation of chlorides, the potato plants showing severe symptoms of phosphate deficiency and chloride toxicity. The effect was still apparent after two years. H.R.W.

254—Leaflet. United States Department of Agriculture.

- a. ANON., 1957.—“Tapeworms of poultry: how to control them.” No. 145, 5 pp.

255—M.S.U. Veterinarian. Michigan State University.

- a. CURELL, S. P., 1957.—“Filariasis, a Michigan problem.” **17** (3), 148-149.
 b. COOHON, D. B., 1957.—“Filariasis.” **17** (3), 149, 160.
 c. OTTO, G. F., 1957.—“Problems in the treatment of heartworms, *Dirofilaria immitis*, of dogs.” **17** (3), 150-154.

(255a) During the past six months Curell has diagnosed approximately 20 cases of *Dirofilaria immitis* in dogs in Michigan, by using the product Filtest for microscopical examination of the blood, whereas during the first eleven years of his practice there he recognized only two cases. One dog with mild keratitis and slight photophobia had a filaria-like worm in the anterior chamber of the eye and microfilariae in the blood. R.T.L.

(255b) Coohon reports from the Michigan Department of Health that veterinary practitioners in the State diagnosed 12 cases of *Dirofilaria immitis* in dogs during the year 1956 and 10 cases during the first three months of 1957. R.T.L.

(255c) [This paper is reprinted from *Mich. St. Coll. Vet.*, 1955, **16**, pp. 35, 38-41.]

256—Médecine Tropicale.

- a. PELLEGRINO, A. & GIUDICELLI, P., 1957.—“Confrontations radio-cliniques dans 85 cas de bilharziose urinaire.” **17** (1), 7-27.

257—Mededelingen van het Instituut voor Rationele Suikerproductie. Bergen-op-Zoom.

- a. OUDEN, H. DEN, 1957.—“Het bietencystenaaltje en zijn bestrijding. IV. Enige proeven over de verwelking van bietenbladeren onder invloed van door bietencystenaaltjes-larven afgescheiden stoffen.” **26** (3), 109-129. [English & French summaries pp. 128-129.]

(257a) When sugar-beet leaves were placed in water containing a suspension of larvae of *Heterodera schachtii*, they showed pronounced wilting. Wilting also occurred in a filtrate of the larval suspension. Less wilting occurred in control experiments where leaves were placed in water which had not been in contact with larvae. Further experiments with bacteria found in association with the nematode larvae showed that these organisms were not wholly responsible for the wilting. Den Ouden suggests that larvae of the beet eelworm secrete a toxic substance which causes leaf wilt. H.R.W.

258—Medical Annals of the District of Columbia.

- a. VANORE, F. C., 1957.—“Visceral larva migrans. A cause of severe eosinophilia.” **26** (5), 245-247.

(258a) Vanore tabulates the various causes of eosinophilia and, reviewing recent literature on visceral larva migrans in children, points out that this infection should be strongly suspected in cases of eosinophilia. R.T.L.

259—Medicina. Revista Mexicana.

- a. BIAGI F., F. & PORTILLA, J., 1957.—“Hallazgo de huevecillos de Heteroderidae en heces humanas.” **37** (764), 25–27.
- b. BIAGI F., F. & CASTREJON, O., 1957.—“Observaciones sobre mansonelosis en la Península de Yucatán. III. La fórmula leucocitaria.” **37** (768), 125–128. [English summary p. 127.]

(259a) Heteroderid eggs in different stages of development were found in the faeces of two children in the Children's Hospital of the city of Mexico. The eggs and larvae are briefly described and figured. M.MCK.

(259b) Among 107 persons aged 15 to 17 years and infected with *Mansonella ozzardi* in Yucatan, Mexico, eosinophilia was present in 90.7%, while in 32 apparently uninfected individuals of the equivalent age group in the same population, the incidence was only 53.2%. In the children aged 1 to 14 years an eosinophilia of over 20% was manifest in 34.4% of 64 infected and only 14.6% of 82 uninfected. M.MCK.

260—Meditsinskaya Parazitologiya i Parazitarnie Bolezni. Moscow.

- a. PODYAPOLSKAYA, V. P., 1957.—[The main principles and trends in the development of the treatment of helminthiases in the U.S.S.R. during the last 40 years.] **26** (3), 259–263. [In Russian.]
- b. SEMENOVA, N. E., TURCHINS, M. E. & GEFTER, V. A., 1957.—[The use of piperazine sulphate in the treatment of ascariasis.] **26** (3), 280–281. [In Russian: English summary p. 281.]
- c. TAREEVA, A. I., 1957.—[Anthelmintic action of piperazine sulphate.] **26** (3), 282–284. [In Russian: English summary p. 284.]
- d. KROTOV, A. I., 1957.—[The mechanism of piperazine action on ascarids.] **26** (3), 284–289. [In Russian: English summary p. 289.]
- e. RAZUMOVA, E. P., 1957.—[Certain data concerning *Diphyllobothrium* disease among the water transport workers in a single village.] **26** (3), 289–293. [In Russian: English summary p. 293.]
- f. VILLAKO, K., KHANGE, L., KHANSON, K. & LEEPER, M., 1957.—[Disorders of the digestive tract in *Diphyllobothrium* disease.] **26** (3), 294–296. [In Russian: English summary p. 296.]
- g. EPSHTEIN, S. I., 1957.—[Past history in the diagnosis and control of *Diphyllobothrium* disease under conditions of the Volga delta.] **26** (3), 297–298. [In Russian: English summary p. 298.]
- h. PANTYUKHOV, A. M., 1957.—[The treatment of opisthorchiasis by hexachlorethane.] **26** (3), 298–301. [In Russian: English summary p. 301.]
- i. LIMAKHINA, M. A., 1957.—[The functional condition of the liver in opisthorchiasis.] **26** (3), 301–307. [In Russian: English summary p. 307.]
- j. ZALNOVA, N. S., 1957.—[Eosinophilic infiltration of the lungs.] **26** (3), 308–311. [In Russian: English summary p. 311.]
- k. PUGACHEVSKAYA, E. F. & GUZ, L. I., 1957.—[Treatment of *Trichuris* infestation with heptylresorcinol.] **26** (3), 316. [In Russian.]
- l. SU, D. L., 1957.—[Ova of *Schistosoma japonicum* destroyed by human urine.] **26** (3), 316–326. [In Russian: English summary p. 326.]

(260b) Piperazine sulphate was given to 111 persons with ascariasis for two successive days (two to three times per day, one hour after meals) in daily doses of 0.2–2.0 gm. for children according to age and 3 gm. for adults. No eggs were found in 82% out of 86 persons on control faecal examination. Only five out of the 111 suffered from such transient side effects as nausea, vomiting and heart-burn. Piperazine sulphate is not hygroscopic and can be conveniently prepared in powder and tablet form. G.I.P.

(260c) Piperazine sulphate was shown to be highly effective against *Toxocara mystax* in cats. The doses tested were 284 mg., 188 mg., 94 mg. and 47 mg. per kg. body-weight; the last dose was insufficient and had to be repeated. Piperazine sulphate does not require laxatives and has a low toxicity. The average lethal dose for white mice is 8.1 mg. per kg. body-weight. G.I.P.

(260d) The action of piperazine on *Ascaris suum* is connected with the peripheral nervous system and stimulates spontaneous body contractions alternating with periods of relaxation. The effect becomes evident at a dilution of 1:10,000 and may remain for 12–18 hours after a

15-30 minute stay in the solution. Dilutions of 1:100 may produce an irreversible reaction. The action of piperazine is similar to that of adrenaline. Piperazine and santonin produce the same effect on ascarids but their manner of action is different and hence, when administered simultaneously to cats, they antagonize each other and considerably decrease the efficacy given by each separately. The individual efficacies are increased when santonin follows piperazine with an interval of two days. G.I.P.

(260f) Most of 43 patients with *Diphyllbothrium* infections suffered from abdominal pains and diarrhoea and complained of meteorism. The amount of hydrochloric acid in the gastric juice was reduced but did not always correspond to the excretion of uropepsin. G.I.P.

(260h) In cases of opisthorchiasis hexachlorethane gives temporary clinical improvement but does not cure the infection. The dosage used was 8 gm. for two or four successive days. Therapy of opisthorchiasis should be accompanied by treatment of the inflammatory and functional disturbances of the liver, bile-ducts and pancreas. G.I.P.

(260j) Three out of nine patients with eosinophilic infiltration of the lungs gave a positive precipitation reaction on live *Ascaris* larvae. In another three the infiltration was probably due to tuberculosis. The author is of the opinion that the aetiology of eosinophilic infiltration should be taken into consideration in the differential diagnosis of lung diseases, which would also enable early treatment of those cases caused by the migration of *Ascaris* larvae. G.I.P.

(260l) *Schistosoma japonicum* eggs are killed by the ammonia which is released from urea when faeces act on urine. Ammonia at a concentration of 1,000 mg. per litre kills washed eggs in 40 minutes, although at a concentration of 100 mg. per litre single eggs remain viable. This is the basis of an easy and cheap method for killing *Schistosoma* eggs and retaining the fertilizing properties of the faeces. The faeces, placed in a closed container in the ground, must be diluted five times with urine and well comminuted. Under these conditions the eggs are killed in three days in the summer and in seven days in the winter. G.I.P.

261—Medycyna Weterynaryjna.

- a. RYBAKOWA, M., 1957.—"Dwa przypadki zarażenia motylicą wątrobową u dzieci." [Two cases of infection of children with liver-flukes.] **13** (2), 80-82. [English & Russian summaries pp. 81-82.]
- b. WERTEJUK, M. & CHOWANIEC, W., 1957.—"Adipinian piperazyny—nowy środek przeciworobaczy u lisów hodowlanych." [Piperazine adipate—a new anthelmintic for silver foxes.] **13** (4), 201-203. [English & Russian summaries p. 203.]
- c. STEFAŃSKI, W., 1957.—"Nieudane próby leczenia robaczycy płucnej owiec przez zastrzykiwanie podskórne płynu Lugola." [Failure of subcutaneous injections of Lugol's solution in the treatment of lungworm infections in sheep.] **13** (7), 385-387. [English & Russian summaries pp. 385, 387.]
- d. ZARŃOWSKI, E. & DARSKI, J., 1957.—"Badania nad terapią glistnicy kur." [Treatment of ascariasis in fowls.] **13** (7), 387-393. [English & Russian summaries p. 393.]
- e. SERAFIN, C., 1957.—"W sprawie pojawienia się przywry *Notocotylus attenuatus* Rudolphi 1809 u gęsi na fermie 'C'." [On the occurrence of *Notocotylus attenuatus* Rudolphi, 1809 in geese.] **13** (7), 398-399.
- f. SZAFŁARSKI, J., 1957.—"Metody alergiczne i serologiczne przy rozpoznawaniu niektórych chorób pasożytniczych owiec." [Allergic and serological methods for the diagnosis of some parasites in sheep.] **13** (9), 521-523.
- g. CZARŃOWSKI, A., 1957.—"Zatrucie świń fluorkiem sodu po odrobaczeniu." [Poisoning of pigs following treatment with sodium fluoride.] **13** (9), 553-554.
- h. TARCZYŃSKI, S., 1957.—"*Toxocara canis* i *T. mystax*—pasożytami człowieka." [*Toxocara canis* and *T. mystax*—parasites of man.] **13** (10), 581-582.

(261b) Single doses of 0.1 gm. per kg. body-weight of piperazine adipate when added to the morning food ration of foxes, were highly effective against *Toxocara canis* and *Toxascaris leonina*. Particularly heavy infections can be treated for two to three successive days. Worms were passed between 12 and 36 hours after the treatment. This anthelmintic is superior to tetrachlorethylene as it is non-toxic and does not require individual administration. G.I.P.

(261d) Seven anthelmintics were compared for their efficacy against *Ascaridia galli* in fowls. The best results, i.e. 100% efficacy, were obtained with carbon tetrachloride as a single dose of 2 ml. per kg. body-weight intubated into the oesophagus. 94.1% of chickens were cured and 98% passed worms following the addition of piperazine adipate for eight days to the drinking water (8 gm. per 4.5 litres); 71.4% were cured and 95.5% passed worms after a 2% admixture of powdered flowers of *Pyrethrum* to the food for seven days. The advantage of the last two methods is that the birds can be treated collectively. Phenothiazine was fairly effective, chenopodium oil plus castor oil was ineffective and sodium fluoride and synthetic benzene produced toxic effects. G.I.P.

(261e) The helminths causing heavy infection and death among geese on a breeding farm in the Koszalin Province were diagnosed as the comparatively rare *Notocotylus attenuatus*. In addition *Heterakis* and occasionally a few specimens of *Echinostoma revolutum* were found in the intestines. G.I.P.

(261f) Szaflarski briefly discusses the Polish literature on the experimental study and application of allergic and serological methods for the identification of helminth infections in sheep. G.I.P.

(261g) Sodium fluoride at the dose of 0.25 gm. per kg. body-weight, as recommended for pigs by the Ministry of Agriculture in Poland, is unsafe for pregnant and lactating sows. Six out of 30 died or had to be killed due to serious toxic symptoms following the treatment with 35 gm. of the fluoride per average body-weight of 150 kg. (actual weight 160–190 kg.). G.I.P.

(261h) Tarczyński draws the attention of doctors in Poland to accidental but serious human infections with *Toxocara canis* and *T. mystax*. He briefly recounts the paths of larval migration of these two species and cites, from literature, cases of their occurrence in man. G.I.P.

262—Monatshefte für Veterinärmedizin.

a. GAEDTKE, 1957.—“Schweinefinnen in Importfleisch.” 12 (4), 87.

(262a) *Cysticercus cellulosae* was found in pork imported from Rumania into Germany. M.MCK.

263—Mycologia.

a. DRECHSLER, C., 1957.—“A nematode-capturing phycomycete forming chlamydospores terminally on lateral branches.” 49 (3), 387–391.

(263a) *Cystopage cladospora* n.sp., a phycomycete which captures nematodes by their adhesion to the hyphae, is described. Among the nematodes captured by this fungus was *Plectus parvus*. J.B.G.

264—N.A.A.S. Quarterly Review. London.

a. SPEDDING, C. R. W., 1957.—“Intensive stocking of grassland.” No. 36, pp. 52–57.

(264a) Spedding, summarizing recently published work, concludes that although the parasitological consequences of high stocking can be offset by improved grazing management, specialization in one class of stock limits its flexibility. This could be improved, with the advantages of specialization retained, if more than one specialized enterprise were adopted so as to allow an alternation of pasture to each. R.T.L.

265—Nachrichtenblatt für den Deutschen Pflanzenschutzdienst. Berlin.

- a. PAESLER, F., 1957.—"Beitrag zur Kenntnis der Nematodenfauna in Champignon-Kulturen." 7, 129-136.

(265a) The author studied the nematode fauna found associated with mushroom beds over a period of nine months. He found 70 species belonging to 24 genera. He discusses their possible roles and methods of preventing high populations in the compost. He points out that blame for damage should not always be placed on the eelworms, especially the saprobes. A few comments are made on the eelworm succession in the material. J.B.G.

266—Nature. London.

- a. RILEY, R. & CHAPMAN, V., 1957.—"Chromosomes of the potato root eelworm." [Correspondence.] 180 (4587), 662.
b. WOOD, F. C. & GOODEY, J. B., 1957.—"Effects of gamma-ray irradiation on nematodes infesting cultivated mushroom beds." [Correspondence.] 180 (4589), 760-761.
c. VERDCOURT, B., 1957.—"Possible occurrence of strains in species of schistosomes." [Correspondence.] 180 (4591), 865-866.
d. WILLIAMS, J. B., 1957.—"Anatomy of *Polystoma integerrimum*." [Correspondence.] 180 (4591), 866.
e. WILLIAMS, T. D., 1957.—"Development of isolated female larvae of the potato-root eelworm (*Heterodera rostochiensis* Woll.)." [Correspondence.] 180 (4593), 1000.
f. WRIGHT, F. N., 1957.—"Rearing of *Simulium damnosum* Theobald (Diptera, Simuliidae) in the laboratory." [Correspondence.] 180 (4594), 1059.
g. ELLENBY, C. & GILBERT, A. B., 1957.—"Cardiotonic activity of the potato-root eelworm hatching factor." 180 (4595), 1105-1106.

(266a) Riley & Chapman have observed mitosis and meiosis in cysts of *Heterodera rostochiensis* at all stages of development and have demonstrated that this species is cytologically distinct from *Meloidogyne incognita* and an unidentified species of *Heterodera*, both of which have been reported to have 16 chromosomes. At mitotic anaphase there was no convergence to the poles, the groups of chromosomes separating in parallel lines. Mitotic chromosomes could not be counted. Nine pairs were observed at the first metaphase of meiosis; the complement consisted of three larger and six smaller pairs although all were very small, the largest being only about 1.2μ long at this stage. Anaphase and telophase were normal. The authors consider that cytological evidence may be useful in defining the limits of eelworm species. S.W.

(266b) Mushroom compost infested with *Ditylenchus* sp. and *Rhabditis* sp. was irradiated by gamma rays. The nematodes were counted before and after treatment and their rates of reproduction assayed on mushroom compost and on agar plates sown with yeast. Doses between 48,000 and 96,000 reps inhibited reproduction of both species. J.B.G.

(266c) Schistosomes are common in ponds, dams and streams in the Kitui area of Kenya. The local *Bulinus africanus ovoides* are naturally infected and adult *Schistosoma haematobium* have been obtained in experimentally infected animals. As Cridland had failed to implicate this mollusc as a vector in Uganda, there may be different strains of the mollusc or schistosome, or both, in these two geographical areas. R.T.L.

(266d) As there are important discrepancies in the published descriptions of the neotenic (branchial) form of *Polystoma integerrimum* new details are given of the anatomy of the normal and the neotenic forms of this species. The completed study will be published later. R.T.L.

(266e) Williams investigated the possibility of parthenogenesis or syngonism occurring in *Heterodera rostochiensis*. Surface sterilized potato tubers were halved, each freshly cut surface was inoculated with a single *H. rostochiensis* larva and the half tubers planted in pots of sterile sand. A control series was similarly treated but each inoculation was with about 2,000 larvae. Examination of the tuber slices revealed numerous egg-containing cysts on the controls and two single developing females on the test series. These remained white until the tenth week and contained no eggs, suggesting that reproduction in the absence of males does not occur. C.C.D.

(266f) Wright has devised a piece of laboratory apparatus in which *Simulium damnosum*, the main vector of onchocerciasis in Ghana, was successfully reared from the egg to adult. The minimum time required for the development was 16 days for the male and 20 days for the female. The larval stage lasted from 14 to 40 days. R.T.L.

(266g) Perfusion of frog's heart with concentrated preparations of potato-root diffusate elicited a cardiotonic effect. Within limits the response varied with dilution. Comparison of two distinct preparations showed that an assessment of activity of the hatching factor by the cardiotonic and by larval hatching techniques were in agreement. Ellenby & Gilbert suggest that assay of potato-root diffusate by perfusion of the hypotonic frog heart may be a useful alternative to the larval hatching method and may yield information on the hatching mechanism itself. The limitations of the heart assay method are outlined. Further heart perfusion experiments revealed a "synergistic" effect between the hatching factor and strophanthin-g and a potentiation of the hatching factor with hydrogen peroxide. Furthermore it was found that hydrogen peroxide stimulates hatching of the potato-root eelworm. On the basis of this evidence the hypothesis is put forward that the potato-root eelworm hatching factor has some of the properties of the cardiac glycosides and simpler lactones. H.R.W.

267—Nematologica.

- a. GOFFART, H., 1957.—"Bemerkungen zu einigen Arten der Gattung *Meloidogyne*." 2 (3), 177-184. [English summary p. 183.]
- b. JONES, F. G. W., 1957.—"Resistance-breaking biotypes of the potato root eelworm (*Heterodera rostochiensis* Woll.)." 2 (3), 185-192. [German summary p. 192.]
- c. CAPSTICK, C. K., TWINN, D. C. & WAID, J. S., 1957.—"Predation of natural populations of free-living nematodes by fungi." 2 (3), 193-201. [German summary p. 201.]
- d. MURPHY, P. W. & DONCASTER, C. C., 1957.—"A culture method for soil meiofauna and its application to the study of nematode predators." 2 (3), 202-214. [German summary p. 213.]
- e. APEL, A. & KÄMPFE, L., 1957.—"Beziehungen zwischen Wirt und Parasit im Infektionsverlauf von *Heterodera schachtii* Schmidt in kurzfristigen Topfversuchen. II. Haupt- und Nebenwurzelbefall, Geschlechtsverhältnis der Adulten und Lagerichtung der Larven." 2 (3), 215-227. [English summary p. 226.]
- f. DIJKSTRA, J., 1957.—"Symptoms of susceptibility and resistance in seedlings of red clover attacked by the stem eelworm *Ditylenchus dipsaci* (Kühn) Filipjev." 2 (3), 228-236. [German summary p. 236.]
- g. ANDRÁSSY, I., 1957.—"*Aphelenchoides citri* n.sp., ein neuer Wurzelparasit der Zitrone." 2 (3), 237-240. [English summary p. 240.]
- h. FENWICK, D. W., 1957.—"Preliminary studies on the effect of ethylene dibromide fumigation on the hatchability of *Heterodera rostochiensis* (Woll.)." 2 (3), 241-249. [German summary p. 248.]
- i. ELLENBY, C., 1957.—"An investigation into the possibility of parthenogenesis in the potato-root eelworm, *Heterodera rostochiensis* Wollenweber." 2 (3), 250-254. [German summary p. 253.]
- j. PETERS, B. G., 1957.—"Marjorie J. Triffitt, D.Sc. obit 9 March 1957." 2 (3), 255.

(267a) Descriptions and photographs are given of the perineal patterns in *Meloidogyne hapla*, *M. arenaria*, *M. arenaria* subsp. *thamesi*, *M. javanica* and the *M. incognita* group. In Germany *M. hapla* is found mainly out-of-doors: a list of hosts includes eight new ones (*Phlox paniculata* L., *Polygonum convolvulus* L., *P. persicaria* L., *Scleranthus amarus* L., *Vicia angustifolia* (L.) Reichard, *Myosotis arenaria* Schr., *Mentha arvensis* L. and *Achillea millefolium* L.). New hosts for *M. arenaria*, which is found chiefly under glass, are *Ficus elastica* Roxb., *Sparmannia africana* L. and *Begonia* sp. *M. arenaria* subsp. *thamesi* is recorded for the first time on *Beta vulgaris* L., *Nicotiana tabacum* L., *Gardenia* sp. and *Cactus* sp. *M. javanica* has not so far been found in Germany but is recorded for the first time on *Freesia* sp. and *Salix* sp. from Italy. M.T.F.

(267b) Tests were made with resistant clones of *Solanum tuberosum* subsp. *andigena* Juz. & Buk. and with resistant seedlings bred from crosses between these and *S. tuberosum* subsp. *tuberosum* L. Fourteen out of twenty local populations of potato-root eelworm proved capable of breaking resistance. Crude estimates of the proportion of resistance-breaking

females in the populations gave figures ranging from less than 1% to 75%. *S. andigena* line C.P.C. 1673 was rather more resistant than lines C.P.C. 1685 and 1690 to five local races, while one local race appeared to break down resistance in two first backcrosses to *S. tuberosum*. There was no evidence that aggressive local races produced cysts freely on *S. nigrum* or on fifteen other species of Solanaceae. F.G.W.J.

(267c) Nematodes extracted from partly decomposed litter in an oak wood yielded numerous specimens attacked by various predacious fungi. The nematodes included *Tera-tocephalus terrestris*, *T. crassidens*, *Alaimus primitivus*, *Wilsonema otophorum*, *Bunonema reticulatum*, *B. richtersi*, *Aphelenchoides* sp., *Triplonchium cylindricum*, *Plectus* sp., *Mononchus* sp., *Dorylaimus parvus* and *Prismatolaimus* sp. J.B.G.

(267d) Murphy describes two types of culture chamber for use in the study of soil meiofauna. One is a small cell made from a sintered-glass micro-immersion filter, closed by means of a coverslip and a syringe is used for moistening the cell floor, thereby maintaining a high atmospheric humidity within. For larger cultures the same principles are used, but a Gooch filter crucible replaces the micro-immersion filter. Doncaster used Murphy's culture cells for observations on predators of soil and plant-parasitic nematodes, especially of *Heterodera cruciferae*. Four common species of Collembola were seen feeding on *Heterodera*. In a pot culture of *H. cruciferae* where, at the time of extraction the proportion of cysts to known collembolid predators was 5:1, at least 6.9% of the cysts had been fed upon. C.C.D.

(267e) In an investigation of the host-parasite relationship between the sugar-beet nematode, *Heterodera schachtii* Schmidt, and four host plants, namely, sugar-beet (*Beta vulgaris* L.), turnip rape (*Brassica rapa* L.), swede rape (*Brassica rapus* L.), white mustard (*Sinapis alba* L.), the authors showed that there were similar increases of the number of larvae in the total, main and lateral roots of these plants. More larvae were found in the lateral roots when these exceeded the main roots in length, except in turnip rape which had relatively poor root growth. The peak of larval attack occurs when the lateral roots contain the largest number of larvae and there are still many larvae in the main roots. As the lateral roots grow the number of larvae in them increases, but the number of larvae in the main roots decreases, an indication that the lateral roots are more attractive to the larvae. Except for turnip rape, the form of the curve of larval density per 10 c.c. of root plotted against time in days is similar for (i) main roots, and (ii) lateral roots, in all host plants. The density of attack is lower in the main roots than in lateral roots. The larval density appears to reach a peak for the main and lateral roots of each host plant. A greater proportion of second-stage larvae pass to the third stage in lateral roots than in main roots, and there is a loss of larvae in this transition; this loss is least in the most favourable host, swede rape. The sex ratio of the developing worms usually is in the favour of an excess of males, and this excess is favoured by high larval density, but other factors may mask this effect. In turnip rape, swede rape and white mustard most of the invading larvae are found with their tail towards the root tip, but in sugar-beet their orientation appears to be at random. J.J.H.

(267f) Red clover seedlings growing in filter paper were infested with the red clover race of *Ditylenchus dipsaci*. The symptoms produced could be divided into four classes (i) much swollen seedlings, (ii) slightly swollen seedlings, (iii) seedlings without swelling but retarded in growth and with brown necrotic marks and (iv) sound plants. Reproduction had not occurred after 16 days but after 32 days had occurred in groups (i) and (ii) but not in groups (iii) or (iv). The plants of group (iii) can be considered resistant. Degree of swelling in groups (i) and (ii) was correlated with degree of susceptibility. Clover varieties tested included Roosendaal, Merkur, Gendringen and families of Red Meuse. J.B.G.

(267g) Andrassy describes *Aphelenchoides citri* n.sp. found within and around the roots of a young lemon tree from an experimental station near Budapest. The roots bore small swellings where they were most heavily attacked. The nematode is characterized by having the head only slightly offset, a thin stylet 13-14 μ long without basal thickenings, an

elongated median oesophageal bulb, long oesophageal glands, the vulva about 64%, a short post-vulval sac and a long, very thin tail. No males were found. *A. citri* differs from *A. tenuicaudatus* and *A. demani* in having a barely offset head, in its smaller size and longer, finer tail. It differs from *A. tenuicaudatus* also in the shorter stylet and from *A. demani* in the more elongated median bulb and the presence of a post-vulval sac. M.T.F.

(267h) Fumigation of *Heterodera rostochiensis* cysts with ethylene dibromide reduces their hatchability and affects the form of the hatching curve by increasing the time necessary to attain the point of inflection. It is, therefore, impossible to compare hatches from fumigated and from control cysts unless the test is carried on to completion or the form of the two curves investigated in detail. The shift in the point of inflection is less if cysts are allowed to stand for several months before testing but even so it is still dangerous to draw conclusions from tests continued for a limited time. D.W.F.

(267i) Forty-five potato plants were grown singly in observation boxes and a single *Heterodera rostochiensis* larva was added to each. Control plants grown under similar conditions received 3, 5, 10 and 12 larvae. The four cysts found on control plants appeared normal, but the three cysts derived from single larva infections contained relatively few eggs which had disorganized contents. It appears that parthenogenesis does not take place. J.J.H.

268—New Scientist. London.

- a. DUDDINGTON, C. L., 1957.—“Predacious fungi and the eelworm plague.” 2 (28), 14–17.

(268a) Duddington gives a general account of nematode-trapping fungi, describing the different kinds of trap hyphae, the conditions under which they are formed and their mode of action. Nematode-trapping fungi are very wide-spread and research into their uses as control agents of some pathogenic nematodes is described. C.C.D.

269—New Zealand Medical Journal.

- a. BEGG, N. C., BEGG, A. C. & ROBINSON, R. G., 1957.—“Primary hydatid disease of the brain: its diagnosis, radiological investigation, treatment and prevention.” 56 (312), 84–98.
b. SIMPSON, E. J. B., 1957.—“Mass therapy in filariasis. A note on control in Niue Island.” 56 (312), 136–137.
c. ANON., 1957.—“The present hydatid situation in New Zealand and the urgent need for a new approach.” 56 (312), 138–139.

(269b) In a survey, in 1954, on Niue Island 166 out of 748 inhabitants examined were found to harbour microfilariae which were found at all times during daytime, there being no nocturnal periodicity. Following mass therapy with hetrazan in 1956, a second survey gave only 83 positives among 2,791 persons. This fall in the percentage of infected persons cannot be attributed entirely to the hetrazan therapy as there was also routine mosquito control in the villages, while the mosquitoes were largely bush dwellers. R.T.L.

(269c) In spite of the educational and legal efforts of the various Departments of the New Zealand Government concerned, hydatid disease shows no sign of decrease either in man or animals. It is estimated that about 100% of ewes and cows, 80% of lambs and 20% of pigs are infested with cysts. In 1956 the economic loss from condemned livers totalled £1½ millions, while 10% of the cattle livers reaching the British market contained deep-seated hydatid cysts. The proposed programme of a new Hydatid Research Committee is outlined. R.T.L.

270—Nordisk Medicin.

- a. REIN, K., 1957.—“Echinokokksykdommens forekomst i Kautokeino.” 57 (10), 375–377. [English summary p. 377.]

(270a) At Kautokeino, in Finnmark (northern Norway) where reindeer herding is the principal occupation and there is a large number of dogs, 17 cases of echinococcosis, of

which 14 were pulmonary and three hepatic, were reported between 1952 and 1956. As photofluorographic examination of about 1,000 persons revealed pulmonary cysts in 13 instances, it would appear that a considerable number of the whole population is infected.

R.T.L.

271—Nuovi Annali d'Igiene e Microbiologia. Rome.

- a. MASSI, O., 1957.—"Un caso di trichinosi nel suino osservato al mattatoio di Roma." 8 (2), 168-170. [English summary p. 169.]

(271a) Trichinellosis is reported from a pig slaughtered in 1951 and reared near Torpignattara in Italy. Cats and rodents from the same area were not found infected. The previous report of trichinellosis in Italy was in 1948.

M.MCK.

272—Opuscula Zoologica. Instituti Zoosystematici Universitatis Budapestinensis.

- a. ANDRÁSSY, I., 1957.—"*Deladenus aridus* n.sp. und ein Wiedertfund von *Deladenus saccatus* Andrassy, 1954. Nematologische Notizin 5." 2 (1/2), 3-8.
b. ANDRÁSSY, I., 1957.—"*Thornia gubernaculifera* n.sp., ein neuer Süßwassernematode aus Ungarn. Nematologische Notizin 6." 2 (1/2), 9-14.

(272a) *Deladenus aridus* n.sp. is described and figured. Its nearest relative is *D. durus* from which it differs in being smaller and in having a thickened vagina wall, the uterus with a small post-vulval sac and a sharply pointed tail. Additional information is given concerning *D. saccatus* and a key to the species is presented.

J.B.G.

(272b) *Thornia gubernaculifera* n.sp. is described and figured. It is close to *T. steatopyga* and *T. propinqua* (Paesler, 1941), Andrassy, 1957, synonym *T. reginsi* Meyl, 1955, but differs in the relatively more powerful spear, in the second part of the wider oesophagus, the more dorylaimid spicules and various other points. A list of 10 species of the genus *Thornia* is given including the new combination *Thornia steineri* (Schneider, 1925), synonym *Tylencholaimus steineri*.

J.B.G.

273—Parasitica. Gembloux.

- a. GILLARD, A. & BRANDE, J. VAN DEN, 1957.—"Note sur la découverte du nématode du houblon (*Heterodera humuli* Filipjev, 1934) en Belgique." 13 (1), 13-17.

(273a) *Heterodera humuli* has been found in Belgium in the two centres of hop-growing at Poperinge and Asse-Alost. The authors describe the cysts and give a brief account of the biology, host range and geographical distribution of the parasite.

M.T.F.

274—Pflanzenarzt. Vienna.

- a. SCHREIER, O., 1957.—"Fördert eine Rapsdecke die Rübenälchenverseuchung?" 10 (6), 53-54.

(274a) Autumn sowing of rape increased the sugar-beet eelworm in two fields even when the rape was planted late or ploughed in early. In the field sown on 12th August 75% of the plants were found infected on 18th November with an average of 3.3 females each. In the other field, sown on 9th September, 88% of the plants were infected with an average of 5.7 females each. The fields and their fallow control portions were ploughed on 27th November and 10th April respectively, and sown with sugar-beet in the third week in April. Reliable counts could not subsequently be made in the second field but, in that ploughed early, the soil had 26 cysts per 100 gm. where rape had been planted and 16 cysts per 100 gm. where it had lain fallow. Of 117 places in Lower Austria and northern Burgenland, 83% of those known or suspected to be infected with eelworm, and 61% of those not suspected, were infected.

M.MCK.

275—Phytopathology.

- a. HARE, W. W., 1957.—“Inheritance of resistance to root-knot nematodes in pepper.” 47 (8), 455-459.
- b. HOLLIS, J. P., 1957.—“Cultural studies with *Dorylaimus ettersbergensis*.” 47 (8), 468-473.
- †c. DROPKIN, V. H. & MARTIN, G. C., 1957.—“The inhibition of hatching of nematode eggs under moisture stress.” 47 (9), 519.
- †d. FASSULIOTIS, G., 1957.—“X-ray studies on the golden nematode, *Heterodera rostochiensis*.” 47 (9), 520.
- †e. HARRISON, M. B., 1957.—“A new approach to the evaluation of nematocides for the control of the golden nematode.” 47 (9), 523.
- †f. HIRSCHMANN, H., 1957.—“The life cycle and role of intersex in *Ditylenchus trifformis*.” 47 (9), 524.

(275a) Santanka xS, a resistant variety of *Capsicum frutescens*, was crossed with the three varieties Ruby King, California Wonder Special and Truheart which are susceptible to *Meloidogyne incognita*. Another resistant variety, 405B Mexico, was crossed with Burlington and Truheart. The F₁, F₂ and F₃ generations from the five crosses were tested for resistance to *M. incognita*. The results agreed with the hypothesis that resistance is controlled by a single gene and is dominant to susceptibility. Resistance to *M. incognita* var. *acrita* appeared to be controlled by the same or a closely linked gene. The same gene appeared to be involved in the two sets of crosses. All the parents were resistant to *M. arenaria* and *M. javanica* and susceptible to *M. hapla*.
M.T.F.

(275b) Using various micro-organisms, including *Chroococcus* sp., *Chlorella vulgaris*, *Tetradron* sp., *Drepanomonas* sp. and *Cephalothecium* sp., *Dorylaimus ettersbergensis* was successfully cultured on water agar in petri dishes. The nematode would also feed on other nematodes but grew best in cultures of *Chroococcus* sp.
J.B.G.

(275c) The emergence of the larvae from eggs of *Meloidogyne* spp. and *Heterodera rostochiensis* was inhibited by solutions of various salts and of dextrose at a molar concentration equivalent to a potential osmotic pressure of 15 atmospheres. When subsequently placed in water the rates of hatching were inversely related to the concentration of the inhibiting solution and the length of exposure and the *Meloidogyne* larvae were infective after release from inhibition by 1 M salt solutions. The moisture stress causing permanent wilting coincided with the value for complete inhibition. Probably this response of nematode eggs to moisture stress is important in their infectivity and distribution.
R.T.L.

(275d) When *Heterodera rostochiensis* cysts were exposed to X-rays in the dosage of 5 kr. the emergence of larvae was comparable to that from non-irradiated controls. With 160 kr., hatching was delayed for seven days but then proceeded rapidly. With 360 kr., the emergence rate was reduced by 85% and no mature females developed from the larvae when inoculated into roots. At all other dosages mature females developed but the numbers developing from larvae receiving 80 kr. or over were reduced. The eggs of females developing from larvae receiving 20 kr., and over, died after cyst formation.
R.T.L.

(275e) The nematicide PRD (3,4-dichlorotetrahydrothiophene 1,1-dioxide) was added to soil containing *Heterodera rostochiensis* cysts in 4-inch clay pots when potatoes were planted and at subsequent intervals. Efficacy of the compound was indicated by the average numbers of immature females which developed on the roots at the periphery of the soil ball. This was 1.6 when the chemical was used at the rate of 40 lb. per acre, 1.3 at 80 lb. per acre and 0.6 at 160 lb. per acre. In untreated pots the average number was 70, while it was 13 in pots to which D-D mixture at the rate of 450 lb. per acre had been added.
R.T.L.

(275f) *Ditylenchus trifformis* when reared in fungal cultures on potato-dextrose agar produces intersexes as well as normal males and females. The intersexes lay eggs only after copulation with males, giving large numbers of intersexes and males and few females, while normal males and females give rise only to males and females.
R.T.L.

† Abstract of paper presented at the 49th Annual Meeting of the American Phytopathological Society, Palo Alto, California, August 26-28, 1957.

275—Phytopathology (cont.)

- †g. HOLLIS, J. P., 1957.—“A statistical study of nematode populations in soil fumigation experiments.” 47 (9), 524.
- †h. HOLLIS, J. P., FIELDING, M. J. & WEHUNT, E. J., 1957.—“Action of fumigants on nematodes as related to nematocide specifications.” 47 (9), 524.
- †i. JOHNSTON, T., 1957.—“Further studies on microbiological reduction of nematode population in water-saturated soils.” 47 (9), 525-526.
- †j. KIRKPATRICK, J. D. & MAI, W. F., 1957.—“A new staining technique for in situ observation of *Pratylenchus penetrans* and other endoparasitic nematodes.” 47 (9), 526.
- †k. LEWIS, F. J. & MAI, W. F., 1957.—“Survival of encysted eggs and larvae of the golden nematode to alternating temperatures.” 47 (9), 527.
- †l. LOWNSBERY, B. F. & SHER, S. A., 1957.—“Soil fumigation for control of the root lesion disease of walnuts.” 47 (9), 527-528.
- †m. SCHULDT, P. H., BURCHFIELD, H. P. & BLUESTONE, H., 1957.—“Stability and movement studies on the new experimental nematocide 3,4-dichlorotetrahydrothiophene-1,1-dioxide in soil.” 47 (9), 534.

(275g) Statistical examinations of the counts of the populations of *Pratylenchus* spp., *Trichodorus* spp. and *Tylenchorhynchus* spp. in replicated soil fumigation tests gave significant intra-seasonal fluctuations in 41.5%, and crop-season reduction in 55.4% of the analyses made.

R.T.L.

(275h) Analyses of the action of four soil fumigants on five genera of plant-parasitic eelworms showed that the ability of species of *Tylenchorhynchus* and *Pratylenchus* to recover from treatment varied directly with vapour pressure while that of species of *Trichodorus*, *Tylenchus* and *Psilenchus* was apparently independent of vapour pressure.

R.T.L.

(275i) As a species of *Clostridium* was found to produce a toxic principle which killed nematodes in less than two minutes it is suggested that the presence of anaerobic bacteria may be a factor in reducing nematode populations in water-saturated soils.

R.T.L.

(275j) Eelworms in plant tissue can be clearly differentiated if the material is put into 0.5%-1.0% NaOCl₂ for four to eight hours then rinsed, immersed in 50% ethanol for several minutes and transferred to a 1% solution of bromphenol blue or bromthymol blue in 50% ethanol for four hours. Greater detail can be obtained by using a 0.05%-0.1% solution for 12 to 16 hours. The specimen can then be examined in 0.2% acetic acid in 50% ethanol or mounted in glycerol. The eelworms and their eggs are stained green to deep blue in colourless tissue.

R.T.L.

(275k) Whereas in dry soil viability of *Heterodera rostochiensis* cysts kept at alternating temperatures was similar at all temperatures including storage at constant temperatures of -5° and 75°F., in moist soil there were greater losses in viability from alternating than from constant temperatures.

R.T.L.

(275l) In three orchards heavily infected with *Pratylenchus vulnus*, California black and Paradox hybrid walnut replants showed satisfactory growth for three seasons following pressure-chisel machine applications of D-D mixture, Dowfume W-85 and Nemagon. The benefits of pre-planting fumigation are uncertain in duration as the eelworm populations return to pre-treatment levels in two seasons.

R.T.L.

(275m) The new nematicide PRD (3,4-dichlorotetrahydrothiophene-1,1-dioxide) persists three times as long in dry soil as in moist soil. With rainfall it moves downward in a vertical band three to four inches wide which widens with additional rain and tends to become uniformly distributed vertically. During dry periods it moves upward. In the field this pattern is followed whether the chemical is placed on the surface or worked into the top three or six inches. After six inches of rain it penetrated to a depth of over fifteen inches. In soil at pH 5 about 50% was recoverable after 178 days.

R.T.L.

† Abstract of paper presented at the 49th Annual Meeting of the American Phytopathological Society, Palo Alto, California, August 26-28, 1957.

275—Phytopathology (cont.)

- †n. VIGLIERCHIO, D. R. & LOWNSBERY, B. F., 1957.—“Effects of tomato seedlings on larvae of *Meloidogyne hapla*.” 47 (9), 536–537.
- o. HARRISON, M. B., 1957.—“Fumigation of encysted golden nematode eggs and larvae under controlled environmental conditions.” 47 (10), 610–613.
- p. SKOTLAND, C. B., 1957.—“Biological studies of the soybean nematode.” 47 (10), 623–625.

(275n) Diffusate from germinating Rutgers tomato seedlings increases the emergence rate of *Meloidogyne hapla* larvae from the egg masses and is evident within 24 hours, but is less pronounced than that of the hosts of some *Heterodera* species. R.T.L.

(275o) Cysts of *Heterodera rostochiensis* when treated with D-D mixture, chloropicrin, ethylene dibromide, and Vapam gave a reduced rate of larval emergence when the relative humidity of the atmosphere at the time of fumigation was 100% than when it was at 90%. The rate of larval emergence from cysts stored at a relative humidity of 10% for two weeks prior to fumigation was higher than that for cysts stored at 58% relative humidity, except when fumigation was at 10%. Vapam behaved somewhat differently from the other three fumigants and the differences are noted. The fumigants were equally effective at 10°, 20° and 30°C. H.R.W.

(275p) Skotland tested numerous plants from several families for susceptibility to attack by *Heterodera glycines*. Hosts included only members of the Leguminosae and five new records which were *Glycine gracilis*, *Vicia villosa*, *Lespedeza stipulacea*, *L. striata* and *L. cuneata*. A single generation of the nematode was complete in 21 days. Drying of cysts of *H. glycines* reduced egg and larval viability and cysts collected from dried soil and dried scales of narcissus bulbs which had been grown in heavily infested fields apparently had no viable contents. C.C.D.

276—Plant Disease Reporter.

- a. FARRAR, L. L., 1957.—“Plant parasitic nematode genera found in the vicinity of small grain roots in Georgia.” 41 (8), 703–704.
- b. PARRIS, G. K., 1957.—“Screening Mississippi soils for plant parasitic nematodes.” 41 (8), 705–706.
- c. RASKI, D. J., 1957.—“New host records for *Meloidogyne hapla* including two plants native to California.” 41 (9), 770–771.
- d. BROTHERS, S. L. & CHRISTIE, J. R., 1957.—“Some greenhouse tests with the nematocides PRD and ORD.” 41 (9), 772–777.
- e. WHITLOCK, L. S., 1957.—“The burrowing nematode found on ornamental banana plants at Baton Rouge, Louisiana.” 41 (9), 814.
- f. MORGAN, O. D. & JEFFERS, W. F., 1957.—“The effects of fumigation and heat treatment on root-knot nematode and black root rot of strawberries.” 41 (10), 825–831.
- g. VAN WEERDT, L. G., 1957.—“Studies on the biology of *Radopholus similis* (Cobb) 1893, Thorne 1949, Part I.” 41 (10), 832–835.
- h. CHAPMAN, R. A., 1957.—“The effects of aeration and temperature on the emergence of species of *Pratylenchus* from roots.” 41 (10), 836–841.

(276a) Samples of soil taken obliquely under and with drill rows of roots of small grain crops in Georgia, U.S.A., resulted in the finding of potentially pathogenic nematodes. The most common were *Pratylenchus* sp., then *Helicotylenchus* sp., *Trichodorus* sp., *Xiphinema* sp., *Tylenchorhynchus* sp., *Rotylenchus* sp., *Criconemoides* sp., *Meloidogyne* spp. and *Hoplolaimus* sp. No pathogenicity studies have been conducted so far. J.B.G.

(276b) Decline of St. Augustine grass (*Stenotaphrum secundatum*), Zoysia grass (*Zoysia* spp.) and Centipede grass (*Eremochloa ophiuroides*), of azalea, boxwood, camellia, cedar and begonia, and of cotton and pecan, were shown to be associated with the presence of *Tylenchorhynchus* spp., *Trichodorus* spp., *Rotylenchus* spp., *Criconemoides* spp., *Hoplolaimus* spp., *Xiphinema* spp., *Paratylenchus* spp. and *Pratylenchus* spp. J.B.G.

† Abstract of paper presented at the 49th Annual Meeting of the American Phytopathological Society, Palo Alto, California, August 26–28, 1957.

(276c) *Umbellularia californica* and *Juncus leseurii*, both native to California, and *Teucrium fruticans*, grown as an ornamental at Davis, California, are new hosts of *Meloidogyne hapla*. That the California laurel and the salt rush were found infected in localities which have never been cultivated suggests that *M. hapla* may also be native to California soils. R.T.L.

(276d) PRD (3,4-dichlorotetrahydrothiophene 1,1-dioxide) and an isomer ORD were mixed, at the rate of 20 gm. per cubic foot, with sandy soil of the Leon series containing a fairly high miscellaneous population of nematodes, *Hoplolaimus coronatus*, *Belonolaimus* sp. and *Trichodorus christiei*. For comparison other soil samples were similarly mixed with V-C 13 (5 ml.), Malathion (3 ml.) and Nemagon (1 ml.). The effect of each on the nematode soil population and the number of nematodes penetrating the roots of maize (grown in pots) was estimated at intervals and the data tabulated. The nematicidal efficacy of PRD was 78%, and that of ORD 68%, compared with Nemagon 76% and V-C 13 61%. Malathion had little or no effect. Phytotoxicity tests are also tabulated. ORD applied at the 20 gm. rate 14 days after squash bean and okra seeds were planted caused only slight stunting. R.T.L.

(276e) *Radopholus similis* on banana plants grown as ornamentals in the Baton Rouge area, Louisiana, occurred on three of the nine sites sampled. R.T.L.

(276f) Strawberry plants, var. Robinson, were planted in a field of sandy loam heavily infested with *Meloidogyne hapla* and *Pratylenchus* sp. Half the plants were warm-water treated at 127°F. for 2 mins. in February and returned to cold storage until planted out in April. The field was treated with two 30-gallon applications of D-D mixture in October; in June, Nemagon (25% granular 1,2-dibromo-3-chloropropane) was applied to plots of both treated and untreated plants at rates of 68 and 136 lb. per acre in bands 6 in. each side of the plant rows at a depth of 4 in. Five months later 50 plants were removed from each plot. The roots were counted and examined for lesions due to *Pratylenchus* and *Meloidogyne*. The heat treatment reduced the stand of plants, which were therefore larger. The autumn application of D-D did not eliminate the nematodes which built up on the plants during the growing period. The Nemagon greatly reduced the nematode population: it is suggested that had it been applied earlier better control would have been achieved. M.T.F.

(276g) Populations of *Radopholus similis* were obtained from *Buxus microphylla* var. *japonica*, *Calathea lietzei*, *Hedychium coronarium*, *Musa nana*, *Scindapsus aureus* and *Citrus sinensis* on *C. limon* rootstock. These nematodes were used in cross inoculation experiments on various plants. On seedlings of *C. limon* little, if any infestation occurred. Inoculations on to the hosts from which the eelworms were originally derived were successful. From citrus the eelworms readily infested *Lycopersicon esculentum* var. Rutgers and *Zea mays* var. Bantam but re-inoculations of *C. limon* from these two hosts were not successful. Nematodes from *Musa nana* and *Zea mays* readily infested both hosts. The author says that *Citrus* should be called a relatively "poor host" for *R. similis* and that this might explain why *Citrus* generally suffers severely from the eelworm. J.B.G.

(276h) From infested maize roots in water, in Baermann funnels and in petri dishes, emergence of *Pratylenchus* sp. was greatly inhibited when root concentrations greater than 0.025-0.066 gm. per sq. cm. surface area were used. With the larger root samples putrefaction and microbial activity was marked and the decreased emergence was attributed to reduced aeration. Aerating in various ways—shaking or bubbling air through roots in flasks or jars, or using a mistifier technique—greatly increased the numbers of *Pratylenchus* recovered. Varying the temperature at which non-aerated roots were held had relatively little effect on emergence. R.D.W.

277—Proceedings of the Alumni Association, Malaya.

- a. KHOO OON TEIK, 1957.—“Pulmonary paragonimiasis. A clinical study of nine cases seen in Singapore.” **10** (3), 189–210.

(277a) Of nine cases of paragonimiasis diagnosed by Teik in Singapore, eight gave a history of eating raw crab, in Japan, from which they had apparently acquired their infections. The clinical features, treatment and progress of each case are succinctly reported. R.T.L.

278—Proceedings of the Zoological Society of London.

- a. YEH, L. S., 1957.—“A collection of helminths from the great bustard, *Otis tarda* from Spain, with a description of a new species of *Oxyspirura* (Nematoda).” **128** (2), 279–286.
b. YEH, L. S., 1957.—“A new species of *Anomotaenia* (Cestoda) from the Gough Island bunting, *Rowettia goughensis*.” **128** (2), 297–300.

(278a) Yeh describes *Oxyspirura hispanica* n.sp. and *Aprocta orbitalis*, von Linstow, from the orbital socket and *Idiogenes otidis* from the intestine of the great bustard, *Otis tarda*. *O. hispanica* n.sp. is closely related to *O. mansonii* but its right spicule is constantly double that of *O. mansonii*. From a study of these and other species Yeh finds that Skryabin's division of *Oxyspirura* into subgenera, based on the shape of the buccal capsule and the relative lengths of the spicules, is unacceptable. *Otis tarda* is a new host record for *A. orbitalis*. The scolex of *I. otidis* which has only 50 rostellar hooks is described for the first time, the scolex originally described having proved to be that of *I. pseudotidis*, which has 300 hooks. R.T.L.

(278b) *Anomotaenia rowettiae* n.sp. in the bunting *Rowettia goughensis* from Gough Island is differentiated from *A. dehiscens* by the curved shape of the rostellar hooks in which the blade is not distinctly separated from the handle. The hooks which appeared to number 25 to 30 are 18–19 μ in length. There are 29 to 31 testes. R.T.L.

279—Quarterly Journal of Microscopical Science.

- a. BRADBURY, S., 1957.—“A histochemical study of the pigment cells of the leech, *Glossiphonia complanata*.” **98** (3), 301–314.

(279a) Bradbury has found that two types of pigment cell occur in *Glossiphonia complanata*. The first, and larger, are situated in the deeper layers of connective tissue near the intestinal caeca; they contain very many regular spheres, about 3 μ in diameter, which have a protinaceous substrate and contain the yellow pigment which is a tetra-pyrrol compound. The smaller are stellate and lie in the subcutaneous tissue; these are filled with small brown pigment granules, never more than 1 μ in diameter, which histochemical tests suggest are a melanin. S.W.

280—Queensland Agricultural Journal.

- a. SMITH, W. A., 1957.—“Tomato pest control.” **83** (7), 375–380.
b. COLBRAN, R. C., 1957.—“Nematode control in pumpkins.” **83** (9), 499–501.
c. RANBY, P. D., 1957.—“Importance of roundworm in poultry.” **83** (9), 529–533.

(280a) Amongst the common pests of tomatoes in Queensland, root-knot nematode, mainly *Meloidogyne javanica*, is mentioned. R.T.L.

(280b) Colbran describes, and illustrates by photographs, severe galling of the roots of pumpkin plants when grown on the lighter types of soil in Queensland. Satisfactory control was achieved by spot fumigation injected in holes six inches deep around each planting site at the rate of one fluid ounce of ethylene dibromide per 14 holes. To reduce the nematode population of heavily infested soil Sudan grass and *Crotalaria* species, including Gambia pea, were the most suitable cover crops. R.T.L.

(280c) In Queensland, poultry flocks are mainly affected by *Ascaridia galli* and *Heterakis gallinae* and their prevalence is largely due to poor husbandry methods, unsuitable housing, dirty and inadequate litter, overcrowding and faulty feeding. Details are given for treatment of *A. galli* infection by piperazine, tetrachlorethylene, carbon tetrachloride or nicotine sulphate and of *H. gallinae* by phenothiazine. The importance of adding a vitamin A supplement to a good quality mash is stressed.

R.T.L.

281—Report. Scottish Society for Research in Plant Breeding.

- a. DUNNETT, J. M., 1957.—“Embedded cysts” in relation to the utilisation of potato root eelworm resistance.” Year 1957, pp. 50–56.

(281a) Dunnett found that cysts of *Heterodera rostochiensis* may develop on the tubers of potato plants bred for resistance, whereas few or none may be found on the roots. He compared the incidence of “embedded cysts”, i.e. those firmly attached to tubers, on susceptible and on resistant potato varieties, and although an appreciable number occurred on the latter, commercial varieties showed a greater susceptibility. He suggests that cysts forming on resistant plants may constitute a resistance breaking biotype. This being the case, embedded cysts may readily be transported with seed stocks of future resistant potato varieties and their progeny continue to fall under the selective influence of the host.

C.C.D.

282—Revista Brasileira de Biologia.

- a. FREITAS, J. F. TEIXEIRA DE, 1957.—“*Ochoterenatrema caballeroi* sp.n. (Trematoda Lecithodendriidae).” **17** (3), 285–289.
- b. TRAVASSOS, L. & KLOSS, G. R., 1957.—“Nematódeos de invertebrados. 1.^a nota.” **17** (3), 295–302.
- c. COELHO, M. DE V., 1957.—“Aspectos do desenvolvimento das formas larvais de *Schistosoma mansoni* em *Australorbis nigricans*. ” **17** (3), 325–337. [English summary pp. 335–336.]

(282a) In *Ochoterenatrema caballeroi* n.sp. from the bat, *Molossops* sp., from the city of Rio de Janeiro, the acetabulum is smaller than the oral sucker whereas in *O. labda* it is larger.

M.MCK.

(282b) Five new nematode species, of which one belongs to a new genus, are figured and described from beetles of the family Passalidae from Brazil. All but *Lepidonema brasiliensis* n.sp. are known from females only. *Carlosia* n.g. represented by *C. tijucana* n.sp. is closest to *Hystrignathus*, *Lepidonema* and *Xyo*. It is distinguished by the presence of a pair of median as well as of lateral longitudinal alae, by the poor development of the oesophageal bulb, the absence of an isthmus in the oesophagus and the arrangement of the cephalic spines, which are double and extend in two series on the lateral alae up to about the middle of the oesophageal bulb. *L. brasiliensis* n.sp. has not the forked tail of *L. bifurcata*. *Hystrignathus inflatus* n.sp. is characterized by a cephalic inflation of the cuticle which extends almost to the posterior end of the stoma. It resembles *Artigasius vesiculosus* but is didelphic. There is no differential diagnosis for *H. spinosus* n.sp. *Artigasius dubia* n.sp. is closely related to *A. hoehnei* and *A. leidy* but is larger than the former, being 2.53 mm. to 2.61 mm. in length, and differs in measurements from the latter.

M.MCK

(282c) Miracidia of *Schistosoma mansoni*, from eggs from a person residing in Minas Gerais, Brazil, penetrated and developed normally in *Australorbis glabratus* from Belo Horizonte, Minas Gerais. They also penetrated *A. nigricans* from the city of Rio de Janeiro but were subsequently destroyed by amoebocytes. *A. nigricans* has not been found infected with *S. mansoni* in Rio de Janeiro. In sections of oligochaetes, which often live in contact with the snails, Coelho found miracidia of *S. mansoni* in the gut.

M.MCK.

283—Revista Ibérica de Parasitología.

- a. LÓPEZ-NEYRA, C. R., 1957.—“Revisión de la superfamilia Filarioidea (Weinland, 1858). (Adiciones).” **17** (3), 169–273.
- b. MALDONADO QUILES, A., 1957.—“Un caso más de parasitismo endometrial por oxiuros.” **17** (3), 275–276.
- c. FLORES BARROETA, L., 1957.—“Nematodos de aves y mamíferos.” **17** (3), 277–297. [English summary p. 294.]
- d. RODRÍGUEZ GALLEGÓ, C., 1957.—“Primeros casos de cenurosis humana en España.” **17** (4), 341–376. [English summary p. 372.]

(283a) López-Neyra supplements his revision of the Filarioidea (1956) by cataloguing alphabetically from the literature all the known *Microfilariae*, *Agamofilariae* and *Filaria* sensu lato, and supplies a comprehensive host list of the known filarioid species arranged under their amphibian, reptilian, avian, mammalian and human host species. R.T.L.

(283b) One *Enterobius* was found in the discharge from bleeding ulcerations of the orifice of the uterus of a Spanish woman and six more were recovered when the uterus was irrigated. The uterus contained ulcerating polypi and one ovary had a tangerine-sized cyst. It is suggested that the disorders were attributable to the presence of the worms. M.MCK.

(283c) Of the 49 species with which it has been compared *Contracaecum mexicanum* n.sp. from *Pelecanus occidentalis californicus* resembles *C. plagiaticium* most closely. It differs chiefly in that the post-anal papillae are composed of 16 simple papillae arranged asymmetrically and a pair of double papillae. *Cruzia tentaculata* is reported for Mexico in *Didelphis marsupialis californica* and *Physaloptera* (P.) *maxillaris* is recorded for a second time in that country. It occurred in *Pelecanus occidentalis californicus*. M.MCK.

(283d) The 25 known cases of human infections with *Coenurus* are reviewed from the world literature. These infections are considered to be not uncommon in Spain and Portugal. The rostellar hooks of taeniid larvae which have been found in man (*Taenia solium*, *Echinococcus* and species of *Coenurus*) are illustrated and their numbers and measurements are tabulated. [This is a posthumous compilation from Rodríguez Gallego's notes.] M.MCK.

284—Revista del Instituto de Salubridad y Enfermedades Tropicales. Mexico.

- a. MAZZOTTI, L. & HIRANAKA, H., 1957.—“Aplicación del método de Graham en perros infectados con *Taenia pisiformis*.” **17** (1), 29–31. [English summary p. 31.]

(284a) Six young dogs experimentally infected with *Taenia pisiformis* were examined by Graham's tape method daily for four days. All but three of the examinations were positive and revealed from 3 to 1,696 eggs. Isolated proglottides were observed to expel a concentrated suspension of eggs at the anterior border. This probably results in the deposition of eggs around the anus, as in the case of *T. saginata* in man. M.MCK.

285—Revista de Investigaciones Ganaderas. Buenos Aires.

- a. ROVEDA, R. J., 1957.—“Zooparásitos de interés veterinario en la República Argentina.” **1** (1), 15–27.

(285a) Roveda lists under hosts the parasites of domestic animals and rats, white mice, cavies, lambs and coypu rats observed in material sent to the Institute of Animal Pathology of the official board governing research on stock-raising in Argentina. For each parasite he gives the author and year of the first record in that country. M.MCK.

286—Revista Kuba de Medicina Tropical y Parasitología.

- a. LEÓN, L. A., 1957.—“Diagnóstico de la paragonimiasis.” **13** (1/6), 1–4.
- b. BASNUEVO, J. G., 1957.—“Diarreas de etiología parasitaria en el niño. Nuevos avances en el diagnóstico y tratamiento.” **13** (1/6), 5–14.
- c. BASNUEVO, J. G., 1957.—“Diarrea por *Trichuris trichiura* (tricocéfalo).” **13** (1/6), 14–16.

- d. BASNUEVO, J. G., 1957.—“Diarrea por *Strongyloides stercoralis*.” 13 (1/6), 16-18.
- e. BASNUEVO, J. G., 1957.—“Diarrea por *Necator americanus*.” 13 (1/6), 18-20.
- f. BASNUEVO, J. G., 1957.—“Diarrea por *Ascaris lumbricoides*.” 13 (1/6), 21-22.
- g. BASNUEVO, J. G., 1957.—“Diarrea por *Enterobius vermicularis* (Oxyuris).” 13 (1/6), 22-24.
- h. BASNUEVO, J. G., 1957.—“Diarrea por *Hymenolepis nana*.” 13 (1/6), 24-26.
- i. BASNUEVO, J. G., 1957.—“Nuevas orientaciones en el tratamiento de la obstrucción intestinal por *Ascaris lumbricoides*.” 13 (1/6), 34-35.

(286a) Periodical examination for *Paragonimus* eggs in the sputum of all patients with broncho-pulmonary diseases is essential on the American continent in view of the presence of a large endemic area in Ecuador, the existence of sporadic cases in the U.S.A., Panama and Peru and the active interchange of people within the Americas and between continents.

M.MCK.

(286b) The helminths responsible for diarrhoea in children in Cuba are, in order of frequency, *Trichuris*, *Strongyloides*, *Necator*, *Ancylostoma*, *Ascaris*, *Hymenolepis nana* and *Enterobius*. Basnuevo reviews the treatments of these infections with common drugs and proprietary anthelmintics and tabulates the incidence of helminths in 649 Cuban children.

M.MCK.

(286c) Basnuevo recounts once again his treatment of heavy *Trichuris trichiura* infections and the accompanying diarrhoea by hexylresorcinol enemata. Dysentery caused by this worm is as frequent in children in Cuba as that caused by other agents.

M.MCK.

(286d) Details are given of the treatment of diarrhoea, caused by *Strongyloides stercoralis* infections, with gentian violet administered orally or by enema.

M.MCK.

(286e) Basnuevo describes three preparations of hexylresorcinol and tetrachlorethylene and the dosages used against *Necator americanus* infections, and outlines the treatment of the accompanying diarrhoea.

M.MCK.

(286f) The dosages of two proprietary piperazine preparations used against *Ascaris lumbricoides* infection are given.

M.MCK.

(286g) Heavy infections with *Enterobius vermicularis* are said to cause, in some cases, soft and blood-stained stools. Worming with piperazine compounds and cleansing of the intestines with enemata containing hexylresorcinol or piperazine hexahydrate are described.

M.MCK.

(286h) The daily oral administration of 0.01 gm. of chloroquine diphosphate per lb. body-weight up to 50 lb. given for 25 days and repeated after an interval of a month, produced clinical improvement in all cases of *Hymenolepis nana* infection but cured only 40%. Basnuevo reiterates his treatment for the accompanying diarrhoea.

M.MCK.

(286i) Basnuevo redescribes treatments with piperazine products against intestinal obstruction by *Ascaris lumbricoides*. He recommends also the administration of liquid paraffin and antispasmodic drugs.

M.MCK.

287—Revista de Sanidad y Asistencia Social. Caracas.

- a. OTTOLINA, C., 1957.—“El miracidio del *Schistosoma mansoni*. Anatomía—citología—fisiología.” 22 (1/4), 1-412.
- b. ITURBE, J., 1957.—“Juicio crítico al trabajo de incorporación a la Academia Nacional de Medicina del Doctor Carlos Ottolina, sobre ‘El miracidio del *Schistosoma mansoni*, anatomía, citología, fisiología.’” 22 (1/4), 413-420.

(287a) In the first half of this paper the miracidium of *Schistosoma mansoni*, and the techniques used, or specially devised, are described in detail. The study of the miracidium,

includes its shape, longevity, ciliated epidermis, equatorial capillary papillae, anterior tubercles, wall of the miracidial sac, penetration glands, excretory apparatus, nervous system, germ cells and cordons. Ottolina has established that the reproductive cells lie in longitudinal cordons lining the miracidial cavity and are not the cells of the germ balls as previously supposed. The second half of the paper is devoted to quotations (translated into Spanish) from previous publications on the structure and biology of miracidia, arranged under the same headings as the main text. M.MCK.

(287b) Iturbe eulogizes Ottolina's paper and reiterates the new findings on the miracidium of *Schistosoma mansoni* [see abstract No. 287a above]. M.MCK.

288—Revue d'Élevage et de Médecine Vétérinaire des Pays Tropicaux.

- a. GRÉTILLAT, S., 1957.—"Essai de traitement des helminthiases intestinale et pulmonaire du porcelet à Madagascar." 10 (1), 5-14. [English & Spanish summaries p. 14.]
- b. EUZÉBY, J., 1957.—"Les helminthes du bétail et du porc dans la Fédération de Malaya." 10 (1), 15-23. [English & Spanish summaries p. 23.]
- c. GRABER, M., 1957.—"Action de l'arséniate de plomb sur divers Anoplocephalidae du mouton." 10 (2), 119-128. [English & Spanish summaries p. 128.]

(288a) Piglets in poor condition were given, on the same day, tetrachlorethylene capsules against their *Ascaris*, *Trichuris* and acanthocephalan infections and subcutaneous injections of one part of tetrachlorethylene and three parts of liquid paraffin against their metastrongyle infections. Only the acanthocephalans were not entirely eliminated. Of 80 piglets examined ten days after treatment only eight were still passing eggs. Grétilat found that the oral doses usually indicated for tetrachlorethylene were insufficient for animals weighing under 20 kg. and recommends the following: 1 c.c. per 4 kg. body-weight by capsule with 1 c.c. per 3 kg. by injection for piglets under 12 kg. in weight and 1 c.c. per 5 kg. by capsule with 1 c.c. per 4 kg. by injection for piglets of 12 kg. to 35 kg. This combined treatment is quick, non-toxic and suitable for use in the bush. A single dose of 1 gm. of piperazine dithiocarbamate per kg. eliminated *Ascaris* and metastrongyles in all of 27 piglets, but as each dose must be weighed separately, this treatment would be impracticable under bush conditions. M.MCK.

(288b) Euzéby annotates the helminth infections he observed in zebus, buffaloes, goats, pigs and in a few sheep, in Malaya. Apart from ascariasis, fascioliasis and infections due to haematophagous strongyles, helminth diseases are not spectacular in Malaya. In zebus and buffaloes *Agriostomum vryburgi* was always found attached to the mucosa of the colon, not in the duodenum as stated in classical works, and *Schistosoma spindale* was often seen in the normal copulated condition in the lumen of the colon. *Dicrocoelium dendriticum*, *Trichinella spiralis* and protostrongyles of small ruminants were not observed. Euzéby recommends regular dosing as the chief means of prophylaxis in view of the haphazard methods of local husbandry. M.MCK.

(288c) *Moniezia expansa*, *M. benedeni*, *Stilesia globipunctata* and *Avitellina centripunctata* were eradicated from all of several dozen sheep in the Chad area after the administration of an aqueous suspension of 0.8-1 gm. of commercial lead arsenate (98% pure). *Stilesia hepatica*, however, was recovered intact from two of the treated sheep. No dieting or purging was required. In those animals in the worst condition Graber observed stupefaction and intense thirst for a few hours following treatment and diarrhoea lasting two to four days from which two died. Two ewes treated after four and a half months' pregnancy gave birth prematurely. The human consumption of animals killed 24 to 48 hours after the expulsion of worms following lead arsenate treatment is inadvisable until more is known of the possible toxicity to man. M.MCK.

289—Rivista di Parassitologia.

- a. BONA, F. V., 1957.—“La formazione dei gusci embrionali e la morfologia dell'utero in *Paricterotaenia porosa* (Rud., 1810) quali elementi di giudizio per la validità del gen. *Paricterotaenia* Fuhrmann, 1932. (Cestoda, Dilepididae).” 18 (3), 155-184. [English summary pp. 182-183.]
- b. CORBO, S., 1957.—“Intorno alla presunta azione antiossuriatica della corallina corsica.” 18 (3), 207-209.
- c. CAPONE-BRAGA, P., 1957.—“Contributo alla conoscenza della diffusione delle elmintiasi intestinali nella popolazione infantile di Roma.” 18 (3), 209-210.

(289a) The recognition of uniovular uterine capsules, as distinct from egg membranes, is important in the classification of the Dilepididae and for an understanding of the modifications of the uterus. Bona describes the changes observable in the egg and egg envelopes of *Paricterotaenia porosa*. In the uterus, the fertilized egg and vitelline cell are surrounded by the so-called vitelline membrane, which is homologous with the thick operculate shell of pseudophyllids and trematodes. Eventually two yolk blastomeres fuse to form the external egg envelope, which thickens and becomes indistinguishably adherent to the vitelline membrane. Because the internal envelope later splits into two layers (an inner, compact, refringent layer and, externally, a thick, deformable, granular layer) the peripheral part of the internal layer has often been looked upon as the external envelope and the true external envelope considered the uterine capsule. The uterus, initially reticulate, becomes sac-like and the absence of uterine capsules shows that *Paricterotaenia* is not a synonym of *Choanotaenia* as claimed by López-Neyra. Bona has confirmed that species of *Anomotaenia* do not develop uterine capsules either. The external envelope of the egg of *P. porosa* is shrivelled in the uterus but swells enormously on contact with water. The thick cuticle of the oncosphere represents the transformed epithelium and not a secretion of the epithelium as in the adult. Bona redescribes the adult and oncosphere from specimens from several parts of Europe and stresses the variability of the measurements of the rostellar hooks and cirrus sac. The latter may measure 130 μ to 440 μ in the same individual. López-Neyra regarded *P. stercoraria* and *P. gongyla* as synonyms of *P. porosa*. Bona rejects the former but, after detailed comparison, accepts the latter. M.MCK.

(289b) Contrary to the results obtained by Izar, 1955 [*Relaz. clin. sci.*, 41, p.6], Corbo has found that a decoction or infusion of the littoral alga *Alsidium helminthochortos* is ineffective against *Enterobius* infection in 15 children. M.MCK.

(289c) Eggs of *Enterobius vermicularis* were found by Graham's method in 75 of 306 children in Rome, and faecal examinations of 61 of the children revealed infections of *Ascaris lumbricoides* (3.28%), *Trichuris trichiura* (24.59%) and *Hymenolepis nana* (14.75%). M.MCK.

290—Science and Culture. Calcutta.

- a. ARYA, H. C., 1957.—“Root knot disease of tomatoes in Jodhpur.” [Correspondence.] 22 (7), 391-393.

(290a) The symptoms of root-knot disease on tomatoes are described. Seedlings grown in sterilized soil with an inoculum of chopped galled roots became infested and showed typical symptoms. In the field, infestation as measured by the number of infested plants was negligible in October and November but in January, February and March it varied from 54-66%. It is concluded that the disease is increasing year by year. M.T.F.

291—Scottish Agriculture.

- a. PARNELL, I. W., 1957.—“Some notes from Australia.” 37 (2), 84-87.

(291a) Parnell considers that a wider use in the United Kingdom of the drenching gun with a soft tube, recently developed in Australia, for the administration of phenothiazine might reduce the number of deaths and loss of condition which often result from the inefficient

guns usually employed. He also suggests that the spraying of weak solutions or suspensions of copper pentachlorophenate through a boom, now being practised in Australia for the control of *Simulimaea subaquatilis*, the local vector of *Fasciola hepatica*, might be usefully adopted in Scotland for the control of *Limnaea truncatula*. R.T.L.

292—Soil Science.

- a. GORING, C. A. I. & YOUNGSON, C. R., 1957.—“ Factors influencing nematode control by ethylene dibromide in soil.” **83**, 377-386.

(292a) Nematode control by ethylene dibromide in a fine sandy loam was studied by laboratory and green-house methods designed to simulate field conditions and methods of application. With an injection depth of 6 inches and 12 inches between injection streams, the diffusion patterns of the streams overlapped, consequently the major variation in nematode control was in the vertical but not in the horizontal direction. When the distances between streams was increased to 24 inches, variations in the degree of nematode control occurred in the horizontal as well as the vertical direction. Poor nematode control was obtained in the top three inches of soil and good control between 3 and 15 inches deep. Diffusion of ethylene dibromide and nematode control were essentially the same above and below the point of injection, thus gravity had little influence on the control of nematodes at a dosage of 69 lb. of ethylene dibromide per acre. A decrease in soil porosity resulted in a decrease in the rate of diffusion of ethylene dibromide but nematode control was not decreased. An increase in soil moisture resulted in increased nematode control. Increased control of nematodes was obtained as the injection depth was increased from 6 to 36 inches. Better control was obtained with a 24-inch than with a 36-inch spacing. Decreased nematode control associated with increased spacing could be partially offset by increased depths of injection. H.R.W.

293—Stain Technology.

- a. TARJAN, A. C. & FORD, H. W., 1957.—“ An aceto-osmium method for demonstrating nematodes in citrus roots.” **32** (4), 171-174.

(293a) When citrus roots are immersed in a mixture containing 2% aqueous osmium tetroxide (2 parts), 10% acetic acid (10 parts) and distilled water (16 parts), they are so blackened, owing to the presence of suberin, that any eelworms present are obscured. If the stained roots are washed in running water for an hour, bleached in 10% to 30% hydrogen peroxide at 32°C. for a few seconds, washed again in water and put successively for 30 minutes into ethanol 70%, 95% and 100% at 52°C. they can be cleared and examined for eelworms after 30 minutes in methyl salicylate at 52°C. R.T.L.

294—Tijdschrift over Plantenziekten.

- a. WINSLOW, R. D. & WILLIAMS, T. D., 1957.—“ Amoeboid organisms attacking larvae of the potato root eelworm (*Heterodera rostochiensis* Woll.) in England and the beet eelworm (*H. schachtii* Schm.) in Canada.” **63** (5), 242-243. [Dutch summary p. 243.]

(294a) Amoeboid organisms were found attacking larvae of *Heterodera rostochiensis* and *H. schachtii* under laboratory conditions, in England and Canada respectively. In both cases the organisms were recovered with eelworm cysts washed out from infested soil and were thought identical with or very similar to *Theratromyxa weberi* Zwillenberg [Proteomyxa: Vampyrellidae] found attacking *H. rostochiensis* in the Netherlands [for abstracts see Helm. Abs. **21**, No. 120c & **23**, No. 174a]. R.D.W.

295—Transactions of the American Microscopical Society.

- a. MEYER, M. C., 1957.—"Spring clips for mounting helminths." **76** (4), 344-345.
- b. TANDON, R. S., 1957.—"Development of the miracidium and its morphology in *Olveria indica* Thapar et Sinha, 1945, an amphistome (Trematoda), parasite of cattle and buffalo in India." **76** (4), 353-358.
- c. SINGH, K. S., 1957.—"On a new amphistome cercaria, *C. lewerti*, from India." **76** (4), 366-370.

(295a) Meyer gives the method of making from discarded watch main springs the spring clips for applying uniform pressure to coverslips covering relatively thick or curved helminth specimens originally suggested, but not described, by Van Cleave (1953). R.T.L.

(295b) The miracidium of *Olveria indica* which is described and figured, becomes fully developed within the egg-shell in 14 days and emerges on the 15th day. R.T.L.

(295c) *Cercaria lewerti* n.sp., described and figured from *Indoplanorbis exustus* in La Martiniere Lake, Lucknow, belongs to the *pigmentata* group. The body is heavily pigmented and there are two eye-spots. The oesophagus has no pharyngeal pouches or sphincter muscle. The tail is longer than the body and has small spines at its posterior end. The excretory duct has a lateral extension near the eye-spots. R.T.L.

296—Transactions of the Royal Society of Tropical Medicine and Hygiene.

- a. HUTTON, P. W., 1957.—"Onchocercal dermatosis." [Correspondence.] **51** (5), 468-469.
- b. RIDLEY, D. S. & SCHOFIELD, F. D., 1957.—"The comparative pathogenicity of small race *Entamoeba histolytica* and other intestinal parasites." **51** (6), 514-518.
- c. GELFAND, M., 1957.—"Cor-pulmonale and cardio-pulmonary schistosomiasis." **51** (6), 533-540.
- d. CROSSKEY, R. W., 1957.—"Further observations on infection of *Simulium damnosum* with *Onchocerca volvulus* in Northern Nigeria." **51** (6), 541-548.

(296a) In Uganda there is a condition very similar to the onchocercal dermatosis in Arabia reported by Fawdry. Nodules are infrequent, microfilariae are extremely difficult to find. Diethylcarbamazine is ineffective, but the condition can be cured by suramin. R.T.L.

(296b) Although this work was mainly concerned with *Entamoeba histolytica*, Ridley & Schofield observed that light infections with *Trichuris* and *Ancylostoma* were evenly distributed throughout groups of patients with and without intestinal symptoms, whereas *Ascaris* showed a significant preponderance in the group with symptoms. The numbers of *Strongyloides*, *Trichostrongylus* and *Hymenolepis nana* were too small to justify any conclusions. S.W.

(296c) Gelfand illustrates, by three cases which died from typical right heart failure, that the clinical diagnosis of cardio-pulmonary schistosomiasis should be reached only after great caution. All three cases had *Schistosoma haematobium* eggs in the bladder, but in two no schistosome eggs were found in the lung tissues. The presence of the eggs in the lung in chronic cor pulmonale may be merely coincidental. R.T.L.

(296d) In Northern Nigeria, *Simulium damnosum*, vector of onchocerciasis shows great seasonal fluctuations in density. Adults begin, with the wet season, to appear in numbers in May or June, increasing rapidly until September and falling rapidly in October or November. During the dry season, between November and April, the fly density is exceedingly low. Data based on dissections indicate that the *Onchocerca* infection rates are related to fly density; when the fly density is moderate the infectivity is high and when at its peak infectivity is low. R.T.L.

297—Ugeskrift for Laeger.

- a. TUDVAD, F., 1957.—"Oxyuriasis behandlet med piperazin adipat." **119** (1), 16-17.

(297a) Tudvad has successfully used piperazine adipate against enterobiasis. The dosages were: children under six, one tablet (0.3 gm.) per year of age per day; children over

six, two tablets thrice daily. Treatment was given on seven successive days and this was repeated after an interval of one week. All the children took the drug without difficulty and there were no side effects. Of a total of 56 children all but one were completely cured. A.E.F.

298—Universitetet i Bergen Årbok. Naturvitenskapelig Rekke.

- a. BRINKMANN, Jr., A., 1957.—“Fish trematodes from Norwegian waters. IIa. The Norwegian species of the orders Aspidogastrea and Digenea (Gasterostomata).” Year 1957, No. 4, 29 pp.

(298a) Brinkmann reports *Macraspis elegans*, *Bucephalopsis gracilescens* (Rudolphi) Nicoll *nee* Tennant, *Prosorhynchus aculeatus* and, for the first time, *P. crucibulum* from fish from Norway. He observed that *M. elegans* has a cirrus, a valve between the pharynx and intestine and that the number of ventral alveoli varied from 13 to 22, increasing with growth. Comparison of different specimens of *M. elegans* showed that the testes, vas deferens and uterus usually appear first, then the ovary and vitellaria and, finally, the genital aperture. The embryonated egg contains a non-ciliated larva like that of *Aspidogaster conchicola*. Brinkmann illustrates the lay-out of the female ducts around the type of *B. gracilescens* and discusses the validity of *P. crucibulum*, *P. aculeatus* and *P. squamatus*, concluding that they are separate species. He points out that Dawes, in “The Trematoda” (1946) has interchanged Nicoll's illustrations (1910) of *P. aculeatus* and *P. crucibulum*. M.MCK.

299—Veterinaria Italiana.

- a. PEGREFFI, G., 1957.—“La distomatosi epatica da *Dicrocoelium dendriticum*.” 8 (2), 123-135.

(299a) Sheep were given two doses of 6 gm. to 7 gm. seven days apart of hexachlorethane in balls of soft soap and, after a further seven days, about 1 c.c. of carbon tetrachloride in liquid paraffin. In the flocks thus treated the eggs of *Dicrocoelium dendriticum* disappeared from the faeces, the sheep ceased to die, their condition improved and their jaundice disappeared. Pegreff compares the pathology of *D. dendriticum* and *Fasciola hepatica* infections as reported by different workers, describes the symptoms, treatment and prophylaxis of distomatosis and recounts the morphology of *D. dendriticum* and the work done in elucidating its life-cycle. M.MCK.

300—Veterinarski Arhiv.

- a. DELAK, M., 1957.—“Pokušaj liječenja trihuroze svinja supkutanom aplikacijom tetraklormetana (carboney tetrachloridum).” [An attempt to treat trichuriasis in pigs by subcutaneous injections of carbon tetrachloride.] 27 (5 6), 140-144. [English & French summaries pp. 143-144.]
- b. WINTERHALTER, M., RUKAVINA, J. & LEVI, I., 1957.—“Intraruminalna aplikacija tetraklormetana (carboney tetrachloridum) govedima za liječenje metiljavosti.” [Injection of carbon tetrachloride into the rumen of cattle for the treatment of liver-fluke.] 27 (7/8), 219-228. [English & German summaries pp. 227-228.]
- c. TURNER, V. & ŽUKOVIĆ, M., 1957.—“Prvi slučaj trihineloze mačke u Jugoslaviji.” [First record of trichinellosis in the cat in Yugoslavia.] 27 (7/8), 234-236. [English & French summaries p. 236.]

(300a) Fourteen pigs were treated for *Trichuris trichiura* infection by injecting, into the knee fold, a 3:1 mixture of pure carbon tetrachloride and liquid paraffin at a dose of 0.6-3 c.c. per kg. body-weight. Side effects were expressed in local swelling and hyperaemia and limping for one or more days. Three pigs were still infected on examination fifteen days later but were cured by a second application. G.I.P.

(300b) As carbon tetrachloride is toxic when injected into the rumen of cattle, producing fatty degeneration, central necrosis and haemorrhages in the liver, it cannot be used for the treatment of liver-fluke in these animals. R.T.L.

301—Veterinary Extension Quarterly. University of Pennsylvania Bulletin.

- a. MARTIN, J. E., 1957.—“Some therapeutic agents used for the control and treatment of gastrointestinal parasites in farm animals.” No. 147, pp. 129–150.

302—Veterinary Record.

- a. TAFS, L. G., 1957.—“Immunological reactions of the host to *Ascaris lumbricoides*.” [Report of the Animal Health Trust Discussion Group, Newmarket, July 10, 1957.] 69 (34), 804.
b. WALLEY, J. K., 1957.—“A new drug for the treatment of lungworms in domestic animals.” 69 (35), 815–824; (36), 850–853.
c. BAXTER, J. T., 1957.—“Treatment of bovine parasitic bronchitis.” [Correspondence.] 69 (36), 870.
d. ALLAN, D., 1957.—“Treatment of bovine parasitic bronchitis.” [Correspondence.] 69 (37), 894.
e. BAXTER, J. T., 1957.—“Some aspects of *Nematodirus* disease in Northern Ireland.” 69 (43), 1007–1010.
f. GEMMELL, M. A., 1957.—“The fox as a host of *Echinococcus* spp. and its possible rôle in the spread of hydatid disease.” [Correspondence.] 69 (43), 1018–1019.
g. SINCLAIR, K. B., 1957.—“*Echinococcus* infection in the fox.” [Correspondence.] 69 (46), 1076.

(302a) Antibody appeared in the serum of pigs in ten days and in serum of rabbits in six days after experimental infection with *Ascaris lumbricoides* and, in both animals, reached its peak in about three weeks. In pigs a self-cure type phenomenon, with a concomitant rise in antibody level, a depressed egg count or the complete elimination of the worms, occurred after reinfection.

R.T.L.

(302b) *Dictyocaulus viviparus*, *D. filaria*, *Protostrongylus rufescens* and *Metastrongylus apri* are expelled alive by domestic animals after treatment with the new, crystalline, soluble drug cyanacethydrazide. In trial experiments, worms were expelled into a polythene bag hanging at the neck and connected to a tracheotomy tube. Marked clinical recovery follows even in grave cases. A single dose is advised of 15 mg. per kg. body-weight if given subcutaneously or 17.5 mg. per kg. if given orally, to maximum doses of 5 g.n. for cattle and 1 g.n. for sheep, goats and pigs. Pregnant cows are not adversely affected. Animals severely infected should be treated on each of three successive days. Concomitant infections, particularly secondary bacterial pneumonia, should be treated at the same time. Sulphadimidine, piperazine compounds and phenothiazine were satisfactorily used concurrently with cyanacethydrazide. Given subcutaneously, cyanacethydrazide causes transient pain and sometimes running of the eyes and nose and increased salivation. Oral administration does not usually produce side effects. The minimum lethal dose is three times the therapeutic dose. Vitamin B₆, at the same dosage as cyanacethydrazide, or sodium pentothal act as antidotes if given shortly after the onset of convulsions.

M.MCK.

(302c) Young cattle with parasitic bronchitis were injected with about 16 mg. of cyanacethydrazide per kg. body-weight, once a week, on two occasions or on three occasions, some being moved to fresh pasture during the experiments. The treated animals numbered 29 and the controls, 19. After treatment no difference could be observed in the clinical conditions of treated and untreated animals kept under the same conditions. Baxter contrasts these results with those published by Walley [see abstract No. 302b above]. A proprietary injection containing carbon tetrachloride appeared to give no benefit. Removal of animals from the source of infection, improved nutrition and the provision of shelter seem to be more important than the expulsion of the parasites in improving the clinical condition of animals with uncomplicated mild and moderately severe infections.

M.MCK.

(302d) Although cyanacethydrazide may be effective in expelling bovine lungworms, Allan considers that their mere expulsion after the onset of the pulmonary oedema will not eliminate the oedema and may not prevent the dyspnoea consequent on the formation of hyaline membrane. There still remains the complex problem of adjusting husbandry methods to prevent reinfection.

R.T.L.

(302e) Although *Nematodirus* infections in sheep are wide-spread in Northern Ireland, clinical symptoms are apparently confined to the eastern part. Generally less than 10% of the lambs in an infected flock die but morbidity rates may vary from 20% to 75%. The species found were *N. filicollis* and *N. battus*. Circumstantial evidence is given that the infection may overwinter on the pastures in Northern Ireland. R.T.L.

(302f) Commenting on Sinclair's report of *Echinococcus granulosus* in five foxes in Wales [for abstract see Helm. Abs., 25, No. 38c], Gemmel reviews the literature of *Echinococcus* infection in foxes and given reasons for concluding that the species identified by Sinclair is not *E. granulosus* and that it may be *E. multilocularis*. If so, the recent reduction of rabbits, due to myxomatosis, may result in an increase of alveolar hydatid in men, as foxes may have to rely, to a greater extent, on microtine rodents as food. R.T.L.

(302g) Replying to Gemmell's comments [for abstract see No. 302f above], Sinclair still considers that the rabbit cannot be dismissed as a possible host of *Echinococcus* spp. without further investigation. R.T.L.

303—West African Medical Journal.

- a. EDINGTON, G. M., 1957.—“Schistosomiasis in Ghana with special reference to its pathology.” 6 (2), 45-57.
- b. OKPALA, I., 1957.—“Diagnosed cases of schistosomiasis in Lagos (Nigeria) 1951-1955.” 6 (2), 74-78.

(303a) The distribution and incidence of *Schistosoma haematobium* and *S. mansoni* in Ghana, reported by various authors in the literature, are tabulated. Schistosomiasis is not considered to be an important cause of cirrhosis of the liver or of splenomegaly in Ghana. Although the symptoms are often mild post-mortem examinations suggest that it is responsible for a high morbidity and mortality in rural areas. R.T.L.

(303b) Between January, 1951 and December, 1955 the urine of 14,108 patients was examined in the Pathology Department at Lagos. 661 (4.7%) showed *Schistosoma haematobium* eggs and of 28,813 faecal samples only 17 (0.06%) contained *S. mansoni* eggs. R.T.L.

304—Wiadomości Parazytologiczne. Warsaw.

- a. GERWEL, C., 1957.—“O szkodliwości pasożytów.” [Harmfulness of human parasites.] 3 (2/3), 75-90. [English & Russian summaries pp. 87-90.]
- b. KOZUSZNIK, B., 1957.—“Organizacja walki z chorobami transmisyjnymi i inwazyjnymi człowieka w Polsce.” [Organization of the control of transmissible and invasive diseases of man in Poland.] 3 (2/3), 91-105. [English & Russian summaries pp. 103-105.]
- c. KOZAR, Z., 1957.—“Przegląd polskich badań parazytologii lekarskiej w ostatnim dwuleciu (1954-1956) i wytyczne na następny okres.” [Review of Polish investigations in medical parasitology during 1954-56 and future indications.] 3 (2/3), 107-148. [English & Russian summaries pp. 139-148.]
- d. ZARNOWSKI, E., 1957.—“Przegląd krytyczny prac z parazytologii weterynaryjnej wykonanych w okresie międzywojennym (1954-1956).” [Critical review of research in veterinary parasitology in Poland during 1954-56.] 3 (2/3), 149-169. [English & Russian summaries pp. 165-169.]
- e. POLUSZYŃSKI, G., 1957.—“Przegląd krytyczny prac z parazytologii ogólnej, wykonanych w okresie międzywojennym (1954-1956).” [Critical review of research in general parasitology in Poland during 1954-56.] 3 (2/3), 171-190. [English & Russian summaries pp. 188-190.]
- f. PAVLOVSKI, E. N., 1957.—“Teoria o parazytocoenozach a rola zarazków chorobotwórczych.” [Theory of parasitocoenosis and the part played by pathogenic organisms.] 3 (2/3), 191-198. [English & Russian summaries pp. 197-198.]
- g. MATOW, K., 1957.—“Czy możliwe jest zakażenie włośnicą drogą połykania pasożytów jelitowych?” [Is an infection with trichinelliasis by oral introduction of intestinal *Trichinella* possible?] 3 (2/3), 209-230. [English & Russian summaries pp. 227-230.]
- h. HOVORKA, J., 1957.—“Przyczynek do wykrywania ognisk *Trichinella spiralis* w naturalnych warunkach Słowacji w ČSR.” [Contribution to the discovery of natural foci of *Trichinella spiralis* in Slovakia (ČSR).] 3 (2/3), 231-236. [English & Russian summaries p. 236.]

- i. BORCHERT, A., 1957.—“Badania nad czynnikami hamującymi rozwój jaj *Ascaris lumbricoides*.” [Investigations into the factors inhibiting the development of *Ascaris lumbricoides* eggs.] 3 (2/3), 237-239. [English & Russian summaries p. 239.]
- j. PAVLOVSKAYA-BIKHOVSKAYA, I., 1957.—“Badania ekologiczno-parazytologiczne w ZSRR ze szczególnym uwzględnieniem przywr ptaków przelotnych.” [Oecologico-parasitological investigations in the Soviet Union with special regard to flukes of migratory birds.] 3 (2/3), 251-259. [English & Russian summaries p. 259.]
- k. WIŚNIEWSKI, W. L., 1957.—“Parazytofauna jeziora Goldapiwo.” [The parasite fauna of Lake Goldapiwo.] 3 (2/3), 261-272.
- l. SKRYABIN, K. I., 1957.—“Zadania współczesnej helmintologii.” [The problems of modern helminthology.] 3 (4), 389-395. [English & Russian summaries pp. 394-395.]
- m. MATOW, K., 1957.—“Niektóre zagadnienia dotyczące trychinelozy i echinokozy.” [Some problems concerning trichinellosis and echinococcosis.] 3 (4), 397-410. [English & Russian summaries pp. 409-410.]
- n. KAZUBSKI, S. L., 1957.—“O biologii *Dicrocoelium dendriticum* (Rudolphi, 1819; Looss, 1899) (Trematoda: Dicrocoeliidae).” [On the biology of *Dicrocoelium dendriticum* (Rudolphi, 1819) Looss, 1899.] 3 (4), 411-418. [English & Russian summaries p. 418.]
- o. ENIGK, K., 1957.—“Nowe metody zwalczania chorób pasożytniczych bydła.” [New methods for the eradication of parasitic diseases in cattle.] 3 (5), 455-459. [English & Russian summaries p. 459.]
- p. PIUSIŃSKI, W., 1957.—“Włośnica u niedźwiedzia polarnego (*Thalarctos maritimus* Phipps).” [Trichinellosis in a polar bear.] 3 (5), 467-471. [English & Russian summaries p. 471.]
- q. ZEMBRZUSKI, K., 1957.—“Wyniki masowych badań parazytofauny przewodu pokarmowego człowieka w Polsce w roku 1954.” [Results of a mass examination for intestinal parasites of the population in Poland in 1954.] 3 (5), 473-475. [English & Russian summaries p. 475.]
- r. KISIELEWSKA, K., 1957.—“Dehelmintyzacja gęsi za pomocą arekoliny hydrobromowej.” [Arecoline hydrobromide in the treatment of helminths in geese.] 3 (5), 477-479. [English & Russian summaries p. 479.]
- s. CZAPLIŃSKI, B., 1957.—“Aktualna problematyka badawcza ośrodków parazytologicznych Moskwy.” [Research problems at the Parasitological Institutes in Moscow.] 3 (5), 481-487.
- t. ŚLUSARSKI, W., 1957.—“Niektóre aktualne problemy parazytologii w Związku Radzieckim. (Z dziennika podróży do ZSRR).” [Some current problems in parasitology in Russia. (From the diary of a visit to the U.S.S.R.)] 3 (5), 489-503.

(304f) The term “parasitocoenosis” is used for the fauna and flora living in a host or in one of its organs. Changes in the character of the medium induced by certain species may render it unfavourable for the development of other species. The species composition of the parasitocoenosis varies in different individuals and in the same individual at different times. Some of the components survive for a long time in certain individuals while in others they do not occur at all although in close contact. Quantitative oscillations were observed. Some components suddenly appeared in greater quantity and then gave way to others. Such studies open up great possibilities for a comprehension of pathogenesis, clinical symptoms, the reasons for non-symptomatic carriers etc. [Based on author's summary.] R.T.L.

(304g) Matow has succeeded in producing muscle trichinellosis in rats, dogs and guinea-pigs by feeding them with scraped intestinal mucosa or whole gut of mice which had been infected with *Trichinella spiralis*. He believes that, in nature, the intestinal forms in infected rats can be a source of oral infection to other rats at any time after feeding on infected material and that the rat has a significant role in the epizootiology and epidemiology of trichinellosis. R.T.L.

(304h) An outbreak of trichinellosis involving ten persons at Moldava (Slovakia) is reported. 1,842 carnivores, rodents and insectivores were examined and nine foci chiefly in carnivores were detected in the upland regions where conditions were favourable for the maintenance of the infection through cannibalism. [From author's summary.] R.T.L.

(304i) Whereas humidity favours the development of the eggs of *Ascaris lumbricoides* the sun's rays and especially drying have a strong destructive effect. Attention should therefore be given to the drying of places where pigs are kept after receiving appropriate anthelmintic treatment. [Based on author's summary.] R.T.L.

(304j) In the territories of the Soviet Union the avian fauna is parasitized by 486 species of Trematoda belonging to 153 genera. From an analysis of the qualitative and quantitative changes in the trematode fauna it appears that this depends on the food of the host, the season of the year, the way in which it is obtained and the migration and the age of the host. [Based on author's summary.] R.T.L.

(304k) A comparison is made between the parasitic fauna of the mesotrophic Lake Gołdapiwo and that of the eutrophic Lake Druzno, surveyed earlier. After the determination of the specific composition of the bird and fish populations and of the benthos, which included molluscs, leeches, oligochaetes and insects, the parasites present were examined and the life-cycle of five trematodes and nine cestodes studied. The eutrophic lake is characterized by an even distribution of the host fauna and its parasites throughout the reservoir, while the mesotrophic lake is divided into a narrow littoral zone rich in host fauna and parasites and a pelagic zone with a characteristic but poorer fauna parasitized mainly by trematodes. The parasite fauna of the littoral zone is of the type found throughout the entire eutrophic lake, consequently, although Lake Druzno was more heavily infected, the parasites of Lake Gołdapiwo were more diverse and richer in species. G.I.P.

(304m) Matow bases on published literature a discussion (i) on natural and experimental infections of *Trichinella spiralis* in which its hosts are divided into five groups according to their susceptibility, on the path of larval migration and the degree of muscle infection produced by a single intestinal worm; and (ii) on the time required for *Echinococcus granulosus* to mature in dogs and for eggs to be passed in the faeces, on some attempts at artificial immunization of the dogs and on the role played by the cat and fox in transmitting hydatid to man and animals respectively. G.I.P.

(304n) Kazubski surveys the published literature on the biology of *Dicrocoelium dendriticum* and from this and his own investigations in Dagestan divides the molluscan intermediaries into principal and secondary hosts, the former living in open prairie and prairie-meadow biotopes, the latter in biotopes overgrown with coppice, bushes etc. He also discusses the possible existence of a cycle with more than one intermediate host and concludes that the problem is not yet solved. G.I.P.

(304o) Once again, Enigk discusses the spread of *Dictyocaulus viviparus* and *Fasciola hepatica* in cattle in West Germany, the treatment of *D. viviparus* infections with ascaridole aerosol and the eradication of the intermediary *Galba truncatula* with sodium pentachlorophenol. G.I.P.

(304p) The author describes roundly-oval, partly calcified *Trichinella* cysts from the diaphragm cura and the mandibular and intercostal muscles of a polar bear which died of a heart attack in the zoo in Warsaw. The bear had refused to eat meat during its four-year stay at the zoo and the author supposes that infection either occurred before capture or in captivity through rats. G.I.P.

(304q) In an examination for intestinal parasites of 30,076 persons (mainly children and adolescents) in Warsaw and eleven provinces of Poland, the infections found were *Enterobius vermicularis* in 20%, *Trichuris trichiura* in 11.6%, *Ascaris lumbricoides* in 5.2% and tapeworms in 0.2%. There was no significant difference in the infections of country and town dwellers except in the case of *T. trichiura* and *E. vermicularis* which were higher in the country. G.I.P.

(304r) Eighty-one geese were successfully treated for *Drepanidotaenia lanceolata* infections with arecoline hydrobromide, at the dose of 0.005 gm. for adults and 0.002-0.003 gm. for young birds, by gastric intubation of the aqueous solution after 12 to 15 hours' fasting. Worms, mostly with scolices and containing viable eggs, were being passed 10-15 minutes after dosing and for two to four hours afterwards. Eight geese, autopsied three hours after dosing, proved to be completely cured. G.I.P.

305—Wiener Medizinische Wochenschrift.

- a. KARPINSKI, W., 1957.—“Piperazin als Wurmmittel in der kinderärztlichen Praxis.” 107 (4), 108–109.
- b. HEINZE, E., 1957.—“Klinische Erfahrungen mit Piperazinadipat (Vermofrik-Tabletten) bei Ascaridiasis.” 107 (13), 265.

(305a) After treatment for seven days with a syrup containing piperazine citrate, the faeces were negative in 97 out of 118 children with *Ascaris* infections, 19 of 24 with *Ascaris* and *Enterobius* infections and 39 out of 42 with *Enterobius* infections. A second course of treatment could be begun as soon as the faeces were found positive. Only three children required a third course of treatment.

M.MCK.

(305b) Eighty-one children infected with *Ascaris* were given tablets each containing 300 mg. of piperazine adipate. They received two to six tablets daily, according to age, for four consecutive days. Of 24 examined after treatment, 17 were negative. As developmental stages of *Ascaris* may be present in the body outside the gut, treatment must be repeated after five weeks.

M.MCK.

306—Wiener Tierärztliche Monatsschrift.

- a. WISCHNJAKOFF, J. & KOMANDAREFF, S. K., 1957.—“Untersuchungen über die Wirkung des Präparates ‘Vermizym’ bei einigen Helminthen des Hundes.” 44 (5), 273–284. [English, French & Italian summaries pp. 283–284.]

(306a) Ten cases are described of Vermizym administration to dogs. One or more doses of about 1 gm. per kg. body-weight were given under varying conditions of feeding and purging. Although the eggs of *Toxocara canis* disappeared from the faeces and those of *Toxascaris leonina* were reduced by 75%, the output of eggs by *Uncinaria stenocephala* was scarcely affected. *In vitro* at 37.5°C., the enzyme was effective against *Toxocara canis* in concentrations up to 3%, and against *Toxascaris leonina* at all concentrations but was doubtful in its effect on *U. stenocephala* at concentrations below 0.3%.

M.MCK.

307—Zeitschrift für Parasitenkunde.

- a. OSCHKE, G., 1957.—“Die ‘Wirtskreiserweiterung’ bei parasitischen Nematoden und die sie bedingenden biologisch-ökologischen Faktoren.” 17 (6), 437–489.
- b. SARWAR, M. M., 1957.—“Observations on the morphology of *Spiculopteragia asymetrica* (Ware 1925) and a discussion on its relationship.” 18 (1), 1–4.
- c. KASSAI, T., 1957.—“Schnecken als Zwischenwirte der Protostrongyliden.” 18 (1), 5–19.
- d. ABDOU, A. H. & SELIM, M. K., 1957.—“On the life-cycle of *Subulura suctoria*, a caecal nematode of poultry in Egypt.” 18 (1), 20–23.
- e. SZIDAT, L., 1957.—“Über den Entwicklungszyklus von *Psilochasmus oxyurus* (Creplin 1825, Lühe 1910) (Trematoda, Psilostomidae) in Argentinien.” 18 (1), 24–35.
- f. GOIL, M. M., 1957.—“Carbohydrate metabolism in trematode parasites.” 18 (1), 36–39.
- g. MIRZA, M. B. & ROBERTS, L. S., 1957.—“A redescription of *Dracunculus* from a snake, *Natrix sipedon* Linn.” 18 (1), 40–43.
- h. MIRZA, M. B., 1957.—“On *Dracunculus* Reichard, 1759, and its species.” 18 (1), 44–47.
- i. ENIGK, K. & STICINSKY, E., 1957.—“Über die Bohrdrüsen der Onkosphäre von *Davainea proglottina* (Cestoidea).” 18 (1), 48–54.

(307a) In this long paper Osche sets out to enumerate and explain the factors involved in the widening of the host range of parasitic nematodes. He deals particularly with “transport” hosts (i.e., hosts not suitable for further development but in which a parasite will encapsulate—called by Baer “hôtes d’attente” or “paratenic hosts”) and their importance in this connection. Numerous examples are given. Osche points out that the many other factors concerned are very little known, although it is clear that the distribution, bionomics, development and phylogeny of host and parasite are inter-dependents. [This paper does not lend itself to a short summary.]

A.E.F.

(307b) Sarwar considers that the transfer of the species *Spiculopteragia cervi* and *S. houdemeri* to *Skrjabinagia* by Altaev, on account of the absence of an accessory piece, is unjustified as *Marshallagia* and *Camelostrongylus* etc. also lack this feature. The species of *Spiculopteragia* can be divided into *S. spiculoptera*, *S. asymetrica*, *S. houdemeri* and *S. cervi* and *Altaevia* n.g. made to contain *S. schulzi* and *S. dagestanica*. As *Spiculopteragia*, *Altaevia* and *Mazamastrongylus* all have membranous fibrillations at the posterior termination of the spicules, a thick short dorsal ray, sock-shaped externo-dorsal rays and bent anterior ends, they are placed in a new subfamily Spiculopteragiinae. In *Altaevia* the dorsal ray splits into two branches each being divided into an external and internal process near its tip. The internal one has a small sharp process on its outer side. The spicules are divided distally into a fan-shaped process and a much reduced process. The anterior end, spicules, bursa, vulva and ovejectors, and female tail of *S. asymetrica* are figured.

R.T.L.

(307c) When Kassai examined the terrestrial molluscs on numerous sheep pastures in Hungary, mostly in Transdanubia, he found infective larvae of protostrongylids of sheep as follows: those of *Protostrongylus* spp. in *Helix pomatia*, those of *Cystocaulus ocreatus* and *Protostrongylus* spp. in *Helicella obvia*, *Zebrina detrita*, *Cepaea vindobonensis*, *Theba carthusiana*, *Abida frumentum* and *Chondrula tridens*, and those of *Muellerius* in *A. frumentum*. These hosts, apart from *C. tridens*, were the commonest terrestrial molluscs. Kassai produced infective larvae of *Cystocaulus*, *Protostrongylus* and *Muellerius* in *H. obvia*, *Z. detrita*, *Cepaea vindobonensis*, *T. carthusiana* and *Helix pomatia*. He found 23 protostrongylid larvae in 50 *Helicella obvia* and another 23 in only eleven of the smaller species *A. frumentum*. He therefore suggests that young snails or those of small size inhabiting the lower third of the grass layer are especially significant in the epidemiology of lungworm disease. He tabulates under their 17 families the molluscan species which have been studied in connection with the transmission of *M. capillaris*, *Cystocaulus ocreatus* and *Protostrongylus* spp., giving their degree of susceptibility to infection and the author and date of the work.

M.MCK.

(307d) Adult *Subulura suctoria* were obtained from chickens fed on encysted nematode larvae found in the body-cavity and attached to the intestinal wall, of 60% of *Ocnera hispida* and 40% of *Blaps polycresta* collected on a farm at Bahteem, Egypt.

R.T.L.

(307e) Szidat describes for the first time the life-cycle of *Psilochasmus oxyurus* and the morphology of the larval stages. Large metacercarial cysts were found in practically all the specimens of *Littoridina australis* examined from the Lake of Chascomús, Argentina. When the metacercariae were fed to young domestic ducks and chicks, almost adult flukes were recovered after about three weeks. The cercariae, which develop in large orange-yellow rediae, leave the molluscan host and encyst in the same species. Szidat found numbers of the adults in the ducks *Dafila spinicauda* on the Lake of Chascomús, thus extending the known range of the fluke to Argentina. Although the cercariae of *P. oxyurus* lacks collar spines, the oesophagus and caeca are filled with large cells as in echinostome cercariae; the redia has a shoulder collar ("Schulterkragen"), two posterior processes and internally a posterior germinal layer; and the life-cycle resembles that of *Protechinostoma mucronisertulatum* and *Cathaemasia hians*. *Psilochasmus* is therefore considered an aberrant genus of the Echinostomidae and not of the Psilostomidae. Some of the measurements which have been recorded by different workers for species of *Psilochasmus* are tabulated.

M.MCK.

(307f) From a study of the carbohydrate metabolism of *Paramphistomum explanatum* and *Gastrothylax crumenifer*, Goil finds that in both species the hourly rate of glycogen consumption during 0 to 10 hours of starvation is higher than that during the period of 10 to 32 hours of starvation, and that an appreciable amount of lactic acid, as one of the end products of the carbohydrate metabolism, was present in the medium in which the parasites were kept during starvation.

R.T.L.

(307g) The many variations in the structure of male and female specimens of *Dracunculus* obtained from a snake *Natrix sipedon* are described and the posterior ends of both sexes are figured. It is concluded that the specimens belong to the same species as those described from *Chelydra serpentina* as *Dracunculus globocephalus* by Mackin (1928) and from *Thamnophis sirtalis* as *D. ophidensis* by Brackett (1938). A portion of a female *Dracunculus* was also found in *Natrix erythrogaster*.
R.T.L.

(307h) Mirza has examined *Dracunculus globocephalus* from *Chelydra serpentina* and *Dracunculus* spp. from eight other hosts, viz., the dog, musk-rat, *Fiber z. cinnamomensis*, *Procyon lotor*, the gopher snake and *Thamnophis* sp., *Natrix erythrogaster* and *N. sipedon*, and critically summarizes the records of other instances of guinea-worm in various other animals. He suggests that *Dracunculus medinensis* of man has adapted itself in varying degrees to live in other animals and that, until cross infections with cyclops infected with mammalian and reptilian *Dracunculus* are made, one should assume that there are only two species of *Dracunculus*, viz., one in mammals and the other in reptiles.
R.T.L.

(307i) The two penetration gland cells of the oncosphere of *Raillietina cesticillus* were clearly visible by phase contrast in unstained specimens or by staining *intra vitam*. Those of *Davainea proglottina* were observed only after staining with a 1:5,000 solution of acridine orange and then viewing with the fluorescence microscope. They appeared in the unhatched, immobile oncosphere as dark patches symmetrically placed at the margins of the body and containing a fluorescent nucleus. In the oncosphere of *D. proglottina* a pair of median gland cells and four other cells of unknown function, distinguishable by their faint fluorescence, were also observable.
M.MCK.

308—Zeitschrift für Pflanzenkrankheiten (Pflanzenpathologie) und Pflanzenschutz.

- a. OOSTENBRINK, M., 1957.—“Der Transport von *Pratylenchus penetrans* (Nematoda) mit Pflanzgut.” 64 (7/10), 484-490. [English summary p. 490.]
- b. DIKER, T., 1957.—“A brief discussion of the root-knot nematodes observed in the sugar beet growing areas of Turkey.” 64 (7/10), 490-493.
- c. BRANDE, J. VAN DEN & GILLARD, A., 1957.—“Importance et répartition en Belgique des nématodes de la sous-famille des Heteroderinae.” 64 (7/10), 493-498. [German summary pp. 497-498.]

(308a) *Pratylenchus penetrans* and *P. pratensis* were shown not to be parasites of the potato tuber although potato roots can harbour considerable populations. Normally stored tubers from infested fields would not be a source of infestation. Nursery stock of various trees can be a carrier of the eelworms, particularly *P. penetrans*, but if planted in nematode-free soil the stock produces healthy roots and little, if any, damage is caused.
J.B.G.

(308b) In the sugar-beet growing areas of Turkey *Meloidogyne hapla*, *M. arenaria*, *M. incognita* and *M. javanica* are present. Most of the infested areas are in western Turkey on light soils. The chief damage is in irrigated fields and vegetable gardens. The yield of beets and the sugar content of infested crops are diminished. Chemical control is limited to market gardens; control in the field is based on rotation with resistant crops such as cereals, lucerne and certain varieties of soya bean, with repeated ploughing.
M.T.F.

(308c) Three species of root-knot nematode have been found in Belgium, viz., *Meloidogyne hapla*, *M. arenaria* and *M. incognita*. They occur chiefly in nurseries and market gardens and are serious pests of chicory (*Cichorium intybus*), tomatoes, lettuce, melons and *Scorzonera hispanica*. Six species of *Heterodera* have been recorded. *H. schachtii* is an important pest of sugar-beet and is wide-spread. *H. rostochiensis* occurs in the sandy coastal regions; measures have been taken in an attempt to limit its spread. *H. major* occurs chiefly on oats, exceptionally on wheat. *H. humuli* has been found in the two centres of hop growing at Poperinge and Asse-Alost. *H. punctata* and *H. cruciferae* occur in one centre each. M.T.F.

309—Zeitschrift für Tropenmedizin und Parasitologie.

- a. VOGEL, H., 1957.—“Über den *Echinococcus multilocularis* Süddeutschlands. I. Das Bandwurmstadium von Stämmen menschlicher und tierischer Herkunft.” 8 (3), 404–454. [English summary pp. 452–453.]

(309a) *Echinococcus multilocularis* and *E. granulosus* are shown conclusively to be separate species. Using *E. multilocularis* cysts from a patient in south Germany, Vogel reproduced the life-cycle three times consecutively through the dog and *Microtus arvalis*. Adult specimens from two *Vulpes vulpes* and hydatids from a field-mouse in south Germany were also those of *E. multilocularis*, as were the stages derived from them in laboratory animals. In gravid *E. multilocularis* there are three to five segments (usually four in the dog), the last is smaller than half the body length and its gonopore is anterior to the middle of the proglottis; the large hooks measure 27.6μ – 34.3μ , there are 14 to 31 testes (none to five being in front of the cirrus sac). The ovary consists of two lobes joined by a slender isthmus. In *E. granulosus*, as seen from gravid worms from Yugoslavia and Hamburg or derived from cysts from the pig, there are three segments, the last is usually longer than the body length and its gonopore is behind the middle of the proglottis or occasionally at mid-level; the large hooks are 33.2μ – 39.8μ long, the testes number 38 to 52 (9 to 23 being in front of the cirrus sac) and the ovary is kidney-shaped. Alveolar hydatid in cattle is considered an atypical form of *E. granulosus* because (i) it is found wherever *E. granulosus* occurs, including areas where alveolar echinococcus of man is absent, (ii) multi and unilocular cysts have been observed in the same animal, and (iii) calves could not be infected experimentally with *E. multilocularis*. Vogel recommends for these atypical cysts the terms “multicysticus” or “multivesicularis”. Although workers with *E. granulosus* have failed to produce gravid specimens in foxes and cats, this species having only been found in species of *Canis*, Vogel has been able to produce gravid *E. multilocularis* in foxes and cats. The cysts of *E. granulosus* occur naturally in the large herbivores while those of *E. multilocularis* parasitize field-mice and possibly other small mammals. Both species can infect primates. *E. sibiricensis* from Alaska appears to be a geographical race or subspecies of *E. multilocularis* on the basis of the size of hooks in the larva and adult, the host specificity and localization of the cysts.

M.MCK.

310—Zeitschrift für Zellforschung und Mikroskopische Anatomie.

- a. ARVY, L., 1957.—“Contribution à l'étude du parasitisme chez le dentale.” 45 (4), 444–463.
 b. MEYER, G. F., 1957.—“Elektronenmikroskopische Untersuchungen an den Apäthyschen Neurofibrillen von *Hirudo medicinalis* L.” 45 (5), 538–542.

(310a) *Dentalium* has become very rare at Dinard. Of 132 examined by Arvy, six were parasitized by *Cercaria prenanis* alone. Mixed infections of *C. prenanis* with *Haplosporidium dentali*, a gregarine or coccidia were not uncommon. The redia, cystophorous cercaria and the process of encystment are described in detail and illustrated by line drawings and photomicrographs of living material and stained histological sections.

S.W.

(310b) Meyer's studies with the electron microscope lead to the conclusion that the structures in the central nervous system of *Hirudo medicinalis*, described by Apathy (1897) and others as continuous neurofibrils, are in fact mitochondria. The error was probably due to the mitochondria being very numerous and having been clumped together and distorted during fixation.

A.E.F.

311—Zentralblatt für Bakteriologie, Parasitenkunde, Infektionskrankheiten und Hygiene. Abteilung 2.

- a. OEI HONG PENG, 1957.—“Studien zu den Problemen der Zellkonstanz: Untersuchungen an *Heterakis gallinarum* (Schränk 1788).” 110 (6/10), 198–236.

(311a) After giving a survey of the literature (with some hundred references) Oei Hong Peng describes in detail his own studies on the post-embryonal development of *Heterakis*

gallinae, with special reference to cell constancy. He first deals with the morphology of the adult, ovum and larva in general and then goes on to describe the oesophagus, midgut and gonads. The paper concludes with descriptions of the glands of the oesophagus, the rectum, the vulva, and the pre-cloacal sucker.

A.E.F.

312—Zoologicheski Zhurnal.

- a. GARKAVI, B. L. & GLEBOVA, I. Y., 1957.—[Development of *Hymenolepis fraterna* (Stiles, 1906) and *Hymenolepis nana* (Siebold, 1852) in the organs of white mice.] **36** (7), 986–991. [In Russian: English summary p. 991.]
- b. TURLIGINA, E. S., 1957.—[Effect of certain chemicals on the reproduction of saprobic nematodes (*Rhabditella* sp.).] **36** (8), 1145–1149. [In Russian: English summary p. 1149.]
- c. SPASSKI, A. A. & SONIN, M. D., 1957.—[A new filaria, *Ornithofilaria tuvensis* n.sp., from the subcutaneous tissue of gallinaceous birds.] **36** (8), 1150–1158. [In Russian: English summary pp. 1157–1158.]
- d. KIRYANOVA, E. S., 1957.—[Deux nouvelles espèces de Nématomorphes du genre *Chordodes* (Creplin, 1847) Möbius, 1855.] **36** (8), 1159–1166. [In Russian: French summary p. 1166.]
- e. AKHMEROV, A. K., 1957.—[On the natural range of *Dactylogyrus solidus* Akhmerov, 1948.] **36** (8), 1251–1252. [In Russian: English summary p. 1252.]
- f. KUDRYAVTSEVA, E. S., 1957.—[Parasite fauna of the fishes inhabiting the Sukhona River and the Kubenskoye Lake.] **36** (9), 1292–1303. [In Russian: English summary p. 1303.]
- g. SOBOLEV, A. A., 1957.—[Evaluation of the application of comparative ontogenic method in the systematics of spirurids (Nematoda, Spirurata).] **36** (9), 1304–1311. [In Russian: English summary p. 1311.]
- h. TRINKLER, O. K., 1957.—[Parasitic worms of *Rattus norvegicus* Berk. and of *Mus musculus* in Gorky and its neighbourhood.] **36** (9), 1412–1414. [In Russian: English summary p. 1414.]
- i. EPSHTEIN, V. M., 1957.—[A new species of leech from the Amur Basin.] **36** (9), 1414–1417. [In Russian: English summary p. 1417.]

(312a) Autopsies of 105 white mice with natural or experimental infections of *Hymenolepis fraterna* and *H. nana* disclosed the presence of larvae not only in the intestinal villi, where the larvae are known to develop, but also in the mesenteric lymph nodes. The eggs reach the nodes via the lymph system and develop there to the cysticercoid stage. The authors suggest that they then return to the intestine and become adult.

G.I.P.

(312b) A number of chemicals were shown in laboratory tests to inhibit the reproduction of a saprophytic species of *Rhabditella* by decreasing fertility and prolonging ontogenesis. They may be divided into those that are very toxic and can only be used on ornamental plants, i.e. systox, pyrophos and octomethyl, and those that are not strongly toxic and can be used on vegetables, i.e. sodium salicylate, potassium rhodanate and "ammonium selitre".

G.I.P.

(312c) *Ornithofilaria tuvensis* n.sp. is figured and described from the subcutaneous tissue of gallinaceous birds in the Tuva region of Russia. It was found in almost all the *Perdix daurica* examined and also in *Lyrurus tetrrix*, *Tetrao urogallus* and *Lagopus mutus*. *Ornithofilaria* and its related genera are briefly revised. *Ularofilaria* is made a synonym of *Ornithofilaria* as the characteristic feature, the presence of terminal papillae on the tail, is considered insufficient as a generic distinction; its only species becomes *O. papilloerca* n.comb. The diagnosis of *Ornithofilaria* is accordingly revised while the generic position of *O. rotundicephala* remains undecided.

G.I.P.

(312d) Two new palaearctic nematomorphs are described and figured. *Chordodes bipilus* n.sp., from Iran, differs from *C. japonensis* by the taller areoles of the first type (9–14 μ high) and by having the globular areoles of the fourth type arranged in pairs. From *C. anthophorus* it differs by the presence of two kinds of cuticular filaments on areoles of the fifth type (11–15 μ and 150–220 μ or 330 μ long) and of two tubercular spines between the areoles, while the inter-areolar spaces between all the types of areoles lack light-refracting structures. *C. tenoderae* n.sp., from the praying mantis (*Tenodera aridifolia*) in Soochow, East China, resembles *C. nobili* in the long filaments on areoles of the sixth type, but differs from it by having as many as nine different types of areoles.

G.I.P.

(312e) Akhmerov briefly discusses, from the literature, the occurrence of *Dactylogyrus solidus* (identical with *D. extensus* and *D. hovarkai*) in European waters and its transference to America. He concludes that *D. solidus* has a discontinuous natural distribution and that the Amur is not its place of origin as has been supposed. G.I.P.

(312f) In this survey of 778 fish from the River Sukhona and Lake Kubenskoye, 96 species of parasites, including 70 helminths and three leeches, were found and 36 of these were new for Europe. The most highly infected were fish of the carp, perch and pike families. Infections were higher in the lake fish but the species were more diverse in the river fish. The fauna included plerocercoids of *Diphyllbothrium latum* and a number of species normally pathogenic to fish, but the infections were generally low both in the lake and the river. G.I.P.

(312g) Sobolev, discussing some recent work on spirurids, points out that the superfamily Physalopteroidea proposed by Chabaud in 1954 had already been created by himself in 1949 to contain the same families [see page 77 of "Descriptive catalogue of parasitic nematodes. Vol. I. Spirurata and Filariata" by Skryabin Shikhobalova & Sobolev]. He transfers *Stammerinema soricis* to *Skrjabinoclava* making the former genus a synonym. He considers that *Dispharynx* cannot be a synonym of *Synhimantus* as the synonymy was based by Osche (1955) on one character only, i.e. the configuration of cordons. The author also disagrees with Osche's invalidation of Sobolev's subfamily Echinuriinae. G.I.P.

(312h) In the neighbourhood of Gorky 72.3% of *Rattus norvegicus* (88.3% of the adults) and 57.1% of *Mus musculus* were infected with cestodes and nematodes. The helminths found in these two rodents and in *Microtus arvalis* were *Hydatigera taeniaeformis*, *Hymenolepis diminuta*, *H. fraterna*, *Ganguleterakis spumosa*, *Trichosomoides crassicauda*, *Heligmosomum polygyrum* and *Syphacia obvelata*. G.I.P.

(312i) The leech *Trachelobdella taimeni* n.sp. was found on *Hucho taimen* from the River Salosu in the Amur basin. G.I.P.

313—Zoologischer Anzeiger.

- a. RÜHM, W., 1957.—"Aphelenchoides sinodendroni n.sp. und Ectaphelenchus zwölferei n.sp., zwei neue, mit *Sinodendron cylindricum* L. vergesellschaftete Nematodenarten." 158 (3/4), 72–82.
- b. ALLGÉN, C. A., 1957.—"Miscellanea nematodologica I." 158 (7/8), 172–179.

(313a) Rühm describes two new species of nematode found associated with the wood-boring beetle *Sinodendron cylindricum* L., but gives no detailed diagnosis of either. *Aphelenchoides sinodendroni* n.sp. has six clearly offset lips, the lateral smaller than the others. The stylet has a slender point and is knobbed at the base. The oesophagus is aphelenchoid but the glandular region is hard to distinguish. The females are 0.461–0.475 mm. long with $a=26-29$ and $V=70-71\%$. There is a small post-vulval sac and the tail is sharply pointed. The males are 0.446–0.460 mm. long with $a=38-45$ and three pairs of caudal papillae, all post-anal and subventral in contrast to those of other *Aphelenchoides* species associated with Ipids. The tail ends in a short stout spike. The spicules are typically aphelenchoid but with a sharp ventral tooth on the proximal part. Dauerlarvae occur in small knots on the wings and in the dorsal folds of the beetles. *Ectaphelenchus zwölferei* n.sp. is the first species of the genus to be described which is not specific to Ipids. The heavily built spear is a tube with a wide lumen and an oblique tip: there is no basal thickening. The anterior third of the procorpus is expanded and narrows in front of the median bulb. The lumen is wide and the "chewing plates" in the bulb are well developed. The female is 1.056–1.320 mm. long with $a=33-35$ and $V=66-68\%$. There is a small post-vulval sac and the tail narrows rapidly and is ventrally curved without a terminal spine. The male is 0.682–1.056 mm. long with $a=33-36$ and the tail has an offset awl-shaped spine. There are four pairs of caudal papillae, one pair pre-anal and, in front of the spicules; one pair ad-anal, and two pairs just in front of

the tail tip. The pre-anal pair has not hitherto been observed in ectaphelenchs. The spicules are typical, the distal half is curved and the proximal part bears a small ventral tooth. The females are mostly found under the wing covers and between the dorsal folds of the beetle.

M.T.F.

(313b) This paper comprises four notes: (i) in discussing the systematic position of the genus *Acantholaimus* Allgén 1933, Allgén redescribes his species *A. longisetosus* and gives it as his opinion that, on account of the form of the amphids and the armament of the oral aperture, the genus may be considered as distantly related to the Microlaimidae rather than the Chromadoridae as suggested by Gerlach in 1951. (ii) Allgén gives Marion's (1870) description and figures of *Stenolaimus macrosoma* and considers its systematic position. He agrees with Filipjev that *S. macrosoma* may be considered synonymous with *Leptosomatium bacillatum* Eberth. (iii) In 1870 Marion described *Calyptronema paradoxum* from a single moulting specimen. No specimens of this genus have since been described and Allgén considers, with Filipjev, that it should be placed in the genus *Enchelidium*, making *Calyptronema* a nomen nudum. (iv) Marion's (1870) description of *Rhabdotoderma morstatti* and his figures are given. Although the description is incomplete, Allgén considers that the genus belongs to the order Chromadorida. The presence of ocellae and the shape of the spicules suggest a relationship with the Cyatholaimidae.

M.T.F.

NON-PERIODICAL LITERATURE

- 314—AGRICULTURAL RESEARCH COUNCIL, 1957.—“Index of agricultural research 1957.” London: Cambridge University Press, 3rd edit., xiv+189 pp.

- 315—BOEV, S. N., 1957.—[Pulmonary nematodes of ungulates in Kazakhstan.] Alma-Ata: Izdatelstvo Akademii Nauk Kazakhskoi SSR., 177 pp. [In Russian.]

The first section of this book deals with the systematics of the fifty species of pulmonary nematodes of ungulates and the detailed morphology of 32 of these species, of which twenty-three are known to occur in Kazakhstan. Three new combinations are made, viz., *Cystocaulus ovis* n.comb. which is transferred from *Pneumoststrongylus*, and *Bicaulus capricola* n.comb. and *B. alces* n.comb. which are transferred from *Varestrongylus*. In the second section the fauna of farm stock and of almost all the wild ungulates known in Kazakhstan is analysed under hosts; the adaptation of pulmonary nematodes to their hosts, to lung biotopes and to external surroundings is discussed.

G.I.P.

- 316—BRITISH VETERINARY ASSOCIATION, 1957.—“Diseases of farm livestock (Section VI). The husbandry and diseases of calves.” London: British Veterinary Association, 94 pp.

This handbook, forming Section VI of Diseases of Farm Livestock, issued to members of the British Veterinary Association, contains a chapter on parasitic diseases including parasitic bronchitis, parasitic gastro-enteritis, fascioliasis and tapeworm infestation. The causal agents, clinical signs, post-mortem appearances, diagnosis, epidemiology, control measures and treatment are concisely summarized.

R.T.L.

- 317—LAPAGE, G., 1957.—“Animals parasitic in man.” Harmondsworth: Penguin Books, Ltd., 320 pp.

Published in the “Pelican” series this little book succinctly describes the various parasitic animals which cause disease, debility and inefficiency in man. Their life-histories and the basic principles underlying their control are briefly summarized. There are 320 pages of text, 65 text figures and 14 photogravures and the price is 5/-.

R.T.L.

- 318—LEROUX, P. L., 1957.—“Report to the Government of the Federation of Rhodesia and Nyasaland on the control of parasitic diseases in livestock.” Rome: Food and Agriculture Organization of the United Nations, FAO Report No. 696, 47 pp.

During the year ending August, 1956, LeRoux travelled extensively throughout Northern Rhodesia investigating animal parasitism and its effects on the livestock industry there. He now lists, with comments, the various species of helminths and their intermediate hosts collected and makes recommendations on treatment and control. Infected *Anisus natalensis*, collected by LeRoux while passing through the Kisumu area of Uganda, were later shown by Dinnik to contain metacercariae of the amphistomes *Carmyerius exoporus*, *C. macupatus* and *Ceylonocotyle scoliocoelium*. R.T.L.

- 319—MARKEVICH, A. P. [Editor], 1957.—[Methods of studying the parasitological situation and the control of parasitic diseases of farm animals.] Kiev: Izdatelstvo Akademii Nauk Ukrainsskoi SSR., 208 pp. [In Russian.]

The book is an account of the general examination of farm stock and intermediaries for parasites, including helminths, and gives instructions on methods of collection, preparation and classification of parasitological material and on the control of invasive diseases. G.I.P.

- 320—THORNTON, H., 1957.—“Text-book of meat inspection, including the inspection of rabbits and poultry.” London: Baillière, Tindall & Cox, 3rd edit., viii + 592 pp.

- 321—UNITED STATES DEPARTMENT OF AGRICULTURE, 1957.—“Index-catalogue of medical and veterinary zoology. Supplement 7. Authors: A to Z.” Washington, D.C.: U.S. Government Printing Office, pp. 1789-2139.